Tyres of Chaos

Tyre of Chaos

Game Development

Milestone 3 Post-Mortem

0. Contents

1. Overview

1.1 Foreword

This document has been compiled using feedback team members, panel members and beta-testers from the public expo (held on Wednesday 19th December 2012). Every effort has been made to ensure the objectivity and fairness of this documents content, and where possible team members have made direct contributions by a mixture of personal post-mortem documents and group feedback meetings.

1.1.1 First Post-Mortem Meeting

Held	17/12/2012
In Attendance	Sam Albon
	Gregory Drake
	Declan Fay
	Stacy Kershaw
	Chris Rogers
	Sean Smithson
	Jack Walker

1.1.2 Individual Post-Mortem Forms

Who	Submitted On
Gregory Drake	03/01/2012
Declan Fay	21/12/2012
Zack Forde	21/12/2012
Rachel Forde	21/12/2012
Stacy Kershaw	29/12/2012
Chris Rogers	28/12/2012
Sean Smithson	21/12/2012
Jack Walker	17/12/2012

1.1.3 Second Post-Mortem Meeting

Held	03/01/2013	
In Attendance	Sam Albon	In-Person
	Gregory Drake	In-Person
	Connor Enderby	Audio-Chat
	Declan Fay	In-Person
	Zack Forde	Text-Chat
	Stacy Kershaw	Text-Chat
	Chris Rogers	In-Person
	Sean Smithson	In-Person
	Jack Walker	Audio-Chat

1.2 Aims and Objectives

The overall objective was to create a fully working beta of a game idea conceived by the team, which adhered to the theme of "zombies versus time", within twelve weeks.

The game idea we aimed for was a tongue-in-cheek driving game, where the player was encouraged to run down zombies, complete missions, collect scrap and upgrade their vehicle. The game would end when either there were too many zombies or when the player has upgraded their vehicle enough and made the jump over the bridge and out of the city.

One of the key mechanics we wanted to exploit was the idea of a "day and night cycle", so that during the day zombies would be a nuisance, but nothing the player couldn't handle. In contrast, however, at night the zombies would become far more active, causing massive damage to the player vehicle if they stopped for even a second. We felt this would give a really good mix of gameplay and enrich the player experience.

Another side to the player experience we wanted to exploit was the idea of resource management. The sole currency within the game we decided would be scrap metal, this would be collected randomly throughout the game as well as given as reward for completing missions. Scrap would be used for upgrading and repairing the vehicle, as well as ammunition for the vehicles weapons. The other side to resource management was the idea that the player had to keep the number of zombies within the level to a minimum, otherwise the military would destroy the city and therefore be *game over* for the player.

Finally, we wanted to make the game completely open world for the player. Although there would be missions and things to do, the player themselves would have the choice of interacting with the story going on or just drive around on their own and do whatever they want.

1.3 Team Breakdown

Name	Roles	
Sam Albon	Lead Programmer	Technical Designer
Gregory Drake	Artist	Level Designer
Connor Enderby	Artist	Animator
Declan Fay	Programmer	Action-Scripter
Zack Forde	Artist	Level Designer
Rachel Forde	Artist	
Stacy Kershaw	Lead Artist	Character Artist
Chris Rogers	Programmer	
Sean Smithson	Producer	Programmer
Jack Walker	Artist	

2. Team Performance

2.1 Sam Albon

2.1.1 Member Role

As technical designer Sam was tasked with taking the teams game concept and turning it into a workable technical design document. That also meant Sam was tasked with maintaining the direction of the game within the group, as well as working with all the programmers and making sure everyone was informed of the progress of development. Sam was also the *go-to* for any questions regarding the game design or programming.

2.1.2 Tasks Completed

- Set-up the project pipelines
    - Set-up the Visual SVN Server
    - Set-up the SkyDrive (cloud storage)
- Created the technical design document
- Created the all milestone documentation
- Created the in-game missions
- Wrote and performed the milestone one presentation
- Wrote and performed the milestone two presentation
- Wrote and performed the milestone three presentation
- Set-up the public expo
- Wrote and designed the group post-mortem

2.1.3 Performance Evaluation

Positives	Negatives
Professional	Lack of communication with artists (two weeks)
Volunteered to write all the paperwork	Compiler Warnings
Hard worker	

Classification: 1st
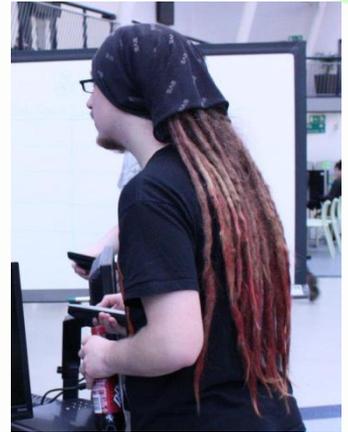
2.2 Gregory Drake

2.2.1 Member Role

During the initial few weeks of the project Gregory worked as a prop-maker for the park level. As the project progressed we found we needed a dedicated level designer for the park, which Gregory took on as he'd already been working on the props.

2.2.2 Tasks Completed

- Designed and created the park level
    - Created all the park concept art
    - Modelled and textured the trees
    - Created the dynamic material for the tree
    - Modelled and textured the bushes
    - Modelled and textured all the buildings
    - Modelled and textured all the rocks
    - Modelled and textured all the walls
    - Textured and created animated material for the water effects
- Rigged and weighted the character models
- Modelled, textured and created the animated material for the skydome
- Researched the initial cell shading effect
- Re-modelled and textured the aeroplane.
- Created the art assets for the HUD
- Created all the particle effects

2.2.3 Performance Evaluation

Positives	Negatives
Volunteered to complete assets behind schedule	
Designed the levels appropriately	
Good communication	
Professional	
Hard worker	

Classification: 1st

2.3 Connor Enderby

2.3.1 Member Role

Connor worked closely with the airport block-out until half way through the project. After that he moved on to the HUD and scene for the garage menu, while also creating the final animations for the zombies.

2.3.2 Tasks Completed

- Modelled and textured the initial garage scene
- Created the initial HUD
- Created the final animations for the zombies
- Modelled and textured the initial luggage cart
- Modelled the initial aeroplane
- Modelled and initial textured radar tower

2.3.3 Performance Evaluation

Positives	Negatives
Volunteered to do complete all the animations	HUD was not within the style
	Stopped coming to meetings (week nine)
	Didn't use the pipeline
	Didn't scale models correctly
	Didn't model efficiently
	Large lack of communication
	Missed all deadlines
	Unprofessional
	Slow and unreliable

Classification: 3rd

2.4 Declan Fay

2.4.1 Member Role

As the projects action-scripter, Declan was solely in charge of the games HUD, menus and their integration with Unreal Script. As the HUD and menus in UDK are written using Scaleform, this involved a lot of liaising with other programmers in order to maintain the correct format for the Action Script to access the Unreal Script. As the project progressed, Declan also took on the role of Q&A testing.

2.4.2 Tasks Completed

- Implemented the base vehicle classes
- Created the HUD
- Created the main menu
- Created the garage menu
- Created the end-game screen
- Implemented various *cheat codes*
- Performed rigorous Q&A testing
  - Reported all bugs to the correct pipeline
  - Reported all changes to the correct pipeline

2.4.3 Performance Evaluation

Positives	Negatives
Flash action-script specialist	Spent too long on action-script/unreal script interfaces
Came up with original game concept	
Good communication	
Good at Q&A	
Professional	
Hard worker	

Classification: 1st

2.5 Zack Forde

2.5.1 Member Role

Zack took on the role of level designer, however as the project developed Zack became the level designer for just the airport where the overall level design was given to Gregory.

2.5.2 Tasks Completed

- Designed the airport
- Created the initial block-out of the airport
    - Created the basic terrain
    - Created placeholder models
    - Created the final models/textures

2.5.3 Performance Evaluation

Positives	Negatives
Submitted airport assets on time	Didn't scale models properly
	Overly focused on trivial things
	Refused to concept anything
	Overly negative criticism (not constructive)
	Insistent on doing the block-out, then complained he was forced
	Unprofessional
	Communicated exclusively with Chris
	Didn't model efficiently
	Never submitted a final level
	Level block-out was extremely late
	Stopped coming to meetings (week ten)
	Refused to talk in almost all meetings
	Milestone two assets were not UV'd
	Didn't use the pipeline
	Would not talk to the lead artist

Classification: 3rd

2.6 Rachel Forde

2.6.1 Member Role

Rachel was one of the environment artists, focusing on smaller assets for the airport.

2.6.2 Tasks Completed

- Created some of the assets for the airport car park
  - Modelled some of the cars
  - Modelled the ticket barriers
  - Modelled the pay machines
  - Modelled the lamp posts
  - Modelled the zebra crossings
- Modelled the airport hangar
- Modelled the airport main building

2.6.3 Performance Evaluation

Positives	Negatives
Volunteered to concept the city	Poor/no communication
	Didn't use the pipeline
	Didn't participate in meetings
	Would not talk to the lead artist
	Stopped going to meetings (week ten)

Classification: 3rd

2.7 Stacy Kershaw

2.7.1 Member Role

As lead artist for the project, Stacy was in charge of ensuring that all of the assets were created and submitted on time, and that they conformed to the standards set in terms of style. She was also the *go-to* for any of questions regarding the art within the game.

2.7.2 Tasks Completed

- Modelled, textured and rigged all the zombies
- Modelled, textured, rigged and animated all the fish
- Modelled and textured the main characters
- Created some of the park assets
- Created all the menus art

2.7.3 Performance Evaluation

Positives	Negatives
Aided all the artists where possible	Poor Lead Artist
Volunteered to complete assets behind schedule	
Liaised with artists as much as possible	
Good communication	
Persistent in completing difficult tasks	

Classification: 1st

2.8 Chris Rogers

2.8.1 Member Role

At the beginning of the project Chris worked on the AI and game environment. As the project developed further we felt the need to appoint a Build Manager, which Chris took on. This involved communicating with the artists to retrieve the assets and latest levels, convert/compile them for UDK and build them into a runnable build to test. This also involved fixing assets that either would not compile in UDK or caused gameplay issues, e.g. no collision meshes, no blocking volumes, incorrect scaling, etc.

2.8.2 Tasks Completed

- Created all the AI controllers and pawns
- Created the AI spawn mechanics
- Created the *cartoony* post-processing effect
- Added all the physical interactable objects
- Fixed all the issues with the airport level
    - o Remove line of sight with the level edge by adding trees
    - o Added in collision meshes for everything
    - o Added in a large number of missing assets
    - o Added in a physical way of joining levels together
- Completed the final airport level
- Wrote and performed the milestone three presentation
- Set-up and supported the public expo
- Sourced the original particle effects

2.8.3 Performance Evaluation

Positives	Negatives
Officially contributed the most on the SVN	Didn't stick to the coding standards
Volunteered to manage/compile art assets	Spent too long on the post-process effect
Solely liaised with over the airport level	Over-zealous with managing art assets
Good communication	Massive number of log messages
Hard worker	
Professional	

Classification: 1st

2.9 Sean Smithson

2.9.1 Member Role

As producer Sean worked to maintain a semi-weekly meeting for the whole group to ensure that all members of the team were made aware of the state of the project and the work that needed to be completed that week. During the second half of the project, however, these meetings were dropped to weekly. This was due to the additional meeting becoming unnecessary and being replaced by informal *coding sessions*, where anyone who was available was invited to work together in a lab. Sean was also a programmer on the project and worked mainly on the vehicle features, day/night cycle and other miscellaneous gameplay features.

2.9.2 Tasks Completed

- Created the day/night cycle
    - Implemented the change in lighting through the day
    - Implemented the change in AI states between day/night
- Created the game environment class
    - Implemented game state management
    - Implemented game clean-up/re-initialisation
    - Implemented player statistics and scoring
- Created the player controller
    - Implemented the driving controls
    - Implemented the vehicle spawning
    - Implemented the vehicle camera
    - Implemented the vehicle weapons
- Created the dynamic skydome
- Imported and fixed the vehicle skeletal meshes for UDK

2.9.3 Performance Evaluation

Positives	Negatives
Volunteered to rig the vehicle skeletal meshes	Failed as a project manager
Volunteered to sort out the marketing for the expo	
Hard worker	
Professional	

Classification: 1st

2.10 Jack Walker

2.10.1 Member Role

As one of the more experienced artists on the project, Jack helped maintain the right art style for the games assets by way of critical feedback and advice. Jack also created all the vehicles and non-level specific props.

2.10.2 Tasks Completed

- Modelled, textured and rigged both vehicles
- Modelled and textured all mission props
  - Clipboard
  - Zombie head on spike
  - Bio-hazard vial
  - Schematic
  - Wooden crate
- Modelled and textured some level assets
  - Stair car
  - Low-poly versions of the player vehicles
  - Wire fences
  - End-game bridge
  - Concrete road barrier

2.10.3 Performance Evaluation

Positives	Negatives
Volunteered to create all the promotional material	
Good communication	
Hard worker	
Professional	

Classification: 1st

2.11 The Team Overall

2.11.1 Positive Performance

The team as a whole were very good at dedicating themselves to the project; people worked hard and largely had professional attitudes towards the project. This has been reflected in the regular meetings: attendance to these meetings, especially in early weeks, was good and members were always willing to have additional meetings if it was needed. On top of this there where several development sessions, often several per week, that various team members showed up to. These sessions ranged from six to twelve hours long, where team members would work hard and close together to lend a hand where needed.

2.11.2 Negative Performance

One of the biggest issues with the team was communication, early in the project some members felt like they were left out of group decisions including the nomination of leads. This seemed to cause a rift in the group, where members who were upset with this decision seemed to rarely communicate their progress. This created problems when it came to the Lead Artist, Lead Programmer and Producer scheduling the development of the project.

An example of this during the later stages of the developing: the Producer, Sean, would check with the airport Level Designer, Zack, asking about the progress of the airport level; however with this rift very little communication was exchanged when discussing it; this caused a misunderstanding. This misunderstanding led to Zack thinking that Sean wanted the airport assets submitted directly, so someone else could import them into the level; whereas Sean was under the impression that Zack was continuing with the airport as before. This was only realised in week twelve, when it was too late for Zack to continue developing the airport, and submitted the remaining airport assets. This led to other team members having to stop their current tasks to ensure a final polished airport was ready for the public expo.

This example highlights a fundamental importance with Leadership within a team: the rift made it so the Lead Artist and Producer gave up attempting to communicate with the more uncooperative members of the team. This in turn gave rise to those members reporting their progress to other team members: members got on with better, which meant there was a convoluted pipeline of information slowly filtering to the Producer which was highly inefficient and ineffective. This happened during the early outlining for the airport level. When Zack was asked about his progress with the level by Stacy, he seemed to ignore her and instead submitted the assets directly to the (yet to be) Build Manager, Chris, when he asked about using the level build for testing. After this, Zack communicated exclusively with Chris which caused a major disruption in the flow of communication.

3. Reflection

3.1 Successes

3.1.1 Driving Experience

One of the most successful aspects of the game was certainly the driving experience. This encompasses a decent level of realism, while still maintaining player-intuitive controls as well as being a fun and enjoyable experience. The process of developing the experience used iterative Q&A, which mostly applied to the level design. The final level was designed used a figure of eight style track, which created a decent flow for the player as well as encourage them to keep moving through the level.

When the panel played Tyres of Chaos they all remarked on how fun the driving experience was, especially with the faster, upgraded vehicles. This was reinforced further by our own play-testing and during the public expo. We managed to get a decent blend of speed and smooth handling with both all the vehicles, which was reflected well when you upgraded them in-game.

3.1.2 Art Style

The art style was very good at highlighting the *tongue in cheek* aspect of the game. There were some concerns during early development that the art style wasn't working, but after applying the *cartoony* post-process effect the art style just fell into place and everything looked fantastic.

Between the three different levels: airport, road and park, there's a distinct colour palette which really highlights to the player that they've changed areas. Where the airport is bland and colourless, the park is very vibrant and exuberant. This is also reflected within the design of the level as the park is much harder than the airport due to the number of zombies that spawn.


With help from the panel we came to the conclusion that the art style allowed us to access a younger target audience, an audience that zombie games had previously been unable to access: due to gore and graphic violence. Moreover than that, using examples such as "My Little Pony" we realised that this art style also appeals to the older generations who appreciate *cartoony* graphics.

3.1.3 Zombies

When it came to introducing the zombies into the game there was a lot of discussion over how to do this. After a lot of discussion and play-testing the final product ended up introducing a very interesting element to the game. Before play-testing the zombies with the level block-outs, zombies were simply a resource in the game that had to be maintained at as low a number as possible, otherwise the game ended. After play-testing we decided to introduce special zombies: ice, fire and poison. These slowed you, damaged you and increased damage taken respectively.
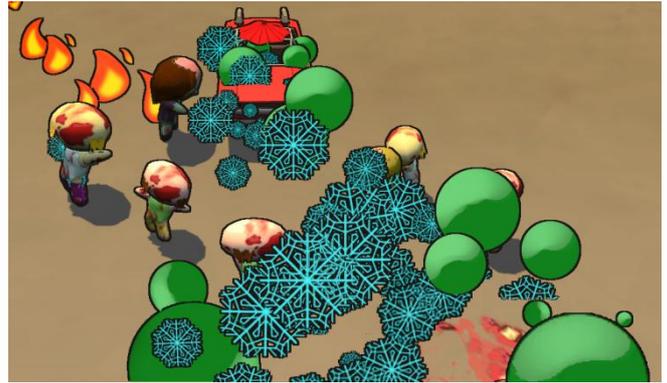
These were quite fun, but after play-testing them with the level block-outs we discovered that the zombies added something we'd be aiming for but could never get quite right. Driving around the airport was quite easy going, however moving to the park things became harder as the level was designed with the zombies spawning in denser, clustered areas making it almost impossible to stop during night-time. Lastly, the road connecting each area and the bridge was neigh impossible to navigate during the day, let alone at night. This kept the player moving and forced them to play more tactically instead of just mindless driving around. We found this element was very enjoyable and enriched the player experience a lot.

3.2 Mistakes

3.2.1 Art Pipeline

One of the major issues we encountered was with the art pipeline. We used SkyDrive to share art assets around everyone, because it's easy to access from pretty much any operating system and has over seven gigabytes in free space which was more than enough. Unfortunately a lot of the time the programmers were asked "where do you want this new asset" and the answer was always "on SkyDrive". This was mostly only an issue with the airport level, where during the final third of the project

(The Verge, 2012)

raw assets were sent directly to Chris, not SkyDrive or even to the Lead Artist. Although the use of the pipeline was heavily encouraged, assets were still being submitted via e-mail or asked where they should be sent. This is one of the reasons Chris became the build manager around this time. The Lead Artist, Lead Programmer and Producer took all the steps they could think of at the time to impress on people the necessity of using the pipeline and how this reduces the workload for the programmers, who were already outnumbered and overworked.

Had the pipeline been used it would have still caused a lot more work because their integration into UDK was never handled centrally. We should have had a UDK package for each level, containing all the level specific assets, and then a package for game, containing all the assets that are used multiple times across the game. This package would then have been managed by the Lead Artist, compiled on a weekly or more often basis and uploaded to a specific location on the SkyDrive that the programmers, or build manager, could then import into the current build very quickly.

A better way for storing the art assets would've been to use an FTP server with folder binding for the ease of the artists, as well as configuring the server to store historic backups of everything on a regular basis. Although there was never a case when we needed to revert assets to a previous version, there are events that can occur where having this option can save a lot of time and effort. For example, submitting a new asset just before a public demo where this new asset breaks the game completely.
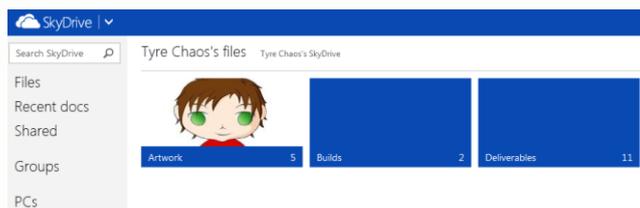
Lastly, before commencing the project there was no discussion held on naming conventions and little said on storage conventions. The folder structure for the SkyDrive contained a folder for artwork, builds and deliverables. The artwork folder then broke down into concept, HUD, models, textures and videos. Beyond that, however, there were no other folders for specific levels or other groupings. The files themselves had no naming conventions, which became a major issue during the last two weeks of the project when some assets were submitted to the Build Manager in a raw format and needed heavy modification before compiling for UDK. It took far longer than it should have because the texture maps were not named correctly in regards to their use or version. Discussion of a naming and storage convention before beginning the project, as well as writing down a concrete document to refer to, is something that must be done for every project.

3.2.2 Project Management

There was little to no project management within the project itself. Sean, our Producer, was the first to admit he had failed the team on this front. During the first week of the project there was no real planning and no scheduling. As we quickly realised this we elected a Producer, who was then tasked with arranging meetings, publishing minutes, sorting task scheduling and allocation, etc.

Some of the issues occurred within that area were that, although we were having semi-weekly meetings, the meetings themselves didn't have enough direction: there was no formal agenda created and the Producer didn't keep the meetings focused enough to whatever task was being discussed. Each meeting should have an agenda, so the Chair of that meeting knows what resolutions need to come about before the end of the meeting. Although there were some schedules created, they were not often adhered to or even referred back to. When approaching the second and third milestone the Lead Programmer set feature lockdown deadlines and sorted task allocation within the programmers, to ensure a demo build was completed for the milestones. Outside of these times there was little to no central organisation behind things.

Some of the feedback given by the Producer, as well as other members, included stringent task allocation management, iterative project-wide time scheduling and solid feature deadlines. A lot of this could've been handled much easier if we'd used project management software, such as *Hansoft*, which is certainly something to consider in the future.

(Hansoft, 2012)

3.2.3 Open World

During our initial pitch we were criticised for being "too ambitious" with such a large *open world* element to our game idea. At the time the Technical Designer knew this to be true unless a significant number of features were dropped in favour of pursuing the *open world*.

To define what we mean by *open world*, it was the idea that the almost all the levels in the game were open for the player to explore and play with. Although there would've been a linear story, in order to play the game the player wouldn't be required to interact with it, unless they wanted to *complete* the game.
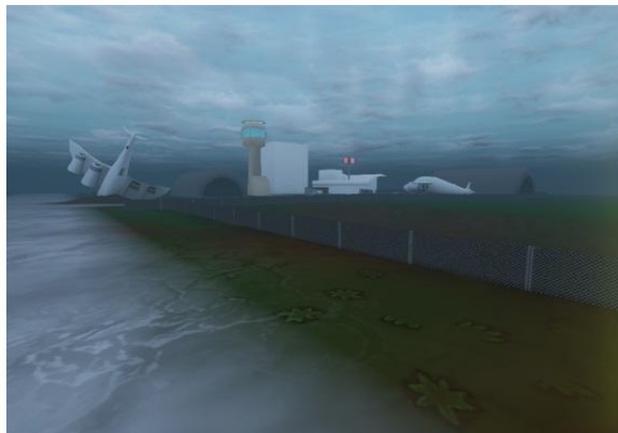
After the first four weeks of development we cut a large number of features as we realised what the team was capable of completing within twelve weeks. Amongst those cut were two thirds of the levels, including the *city* and *park* areas, leaving just the *airport*. Although the team was unified on dropping this amount of content, there was some disagreement on which parts. The argument for the city was the most compelling gameplay-wise, as it showed off the best features of the game as well as giving out the right feeling of being *trapped* and *confined*. The park, however, showed off the art style and colour scene much more; in addition it's faster to design and model as there's a lot of open space with easier repetition of models. The only benefit of the airport was that it was already in production and therefore be the quickest to produce.

At this point it's not clear exactly what the decision was. The only person missing from the meeting mentioned above was the Lead Programmer: when they spoke to people to get the minutes and feedback from the meeting got several different versions of what was happening with the levels. One version said we were considering dropping the city and park, another said we had definitely dropped the city and park, and lastly that the *artists* thought they were dropping the city and park but we (the *programmers*) weren't going to let them. The last of which was the most concerning, as it showed a large divide amongst the team between the artists and programmers, furthermore if the people making the content are under the impression they're not making something: they're not going to make it.

We decided to wait until the airport block-out had been finished, so we could better judge how long additional levels would take to create and also have something concrete to show for the second milestone. However, a final block-out of the airport was never submitted and was eventually completed by Chris and Gregory (see 3.2.4). In the end we compromised with two levels: the airport and park which really showcased the game mechanics very well.

The mistake made here was the allocation of the level design, which again there is a large confusion about. Some of the team remember Zack demanding to be the level designer; others remember him being forced to be the level designer. What we can take away from this is better allocation of tasks overall, as well as stricter deadlines. The delay in the airport block-out had a knock-on effect: the programmers were prevented from having a test environment until late on. This caused a lot of bugs to make it through to the later stages of development, as well as pushing the feature deadline back all the way to the ninth/tenth week of development. When the Build Manager was given the final assets for the airport, and told there would be no newer level build, Chris was forced to stop bug-fixing for almost the entire last week of development in order to fix the airport level and bring it up to a playable standard. Not only is Chris not qualified to do this, but there were other essential tasks that needed completing, which he was very qualified to undertake. Unfortunately, during this late stage of development three of the artists had stopped communicating with most the group, weren't showing up to meetings and had even left the county until the public expo. If the airport had been re-assigned partway through the project when concerns first arose about time constraints, then it's most likely this entire scenario would've been avoided.

3.2.4 Breakdown in Communication

To discuss "the elephant in the room": there was a large breakdown in communication over the course of the entire project. This was first noticed when the deadline for the airport block-out was pushed back to the second milestone. It would've been about this time there was an argument between Stacy, Jack and Zack, which Stacy admits herself was extremely unprofessional; however the result of which was a complete breakdown in communication with Zack and Rachel towards Stacy as Lead Artist. This is also why the airport level was submitted directly to Chris and why he became the build manager.
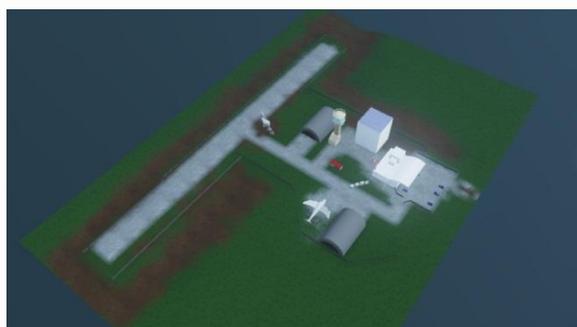
As the project developed there was an insistence to drop two thirds of the levels and focus solely on the airport. This caused a large separation in opinion for many reasons: firstly that the airport wasn't progressing anywhere near what was expected; secondly that the airport on its own did not accurately represent the mechanics of the game, and lastly that the initial level block-out was nowhere near large enough for the player to do anything. At this time the Lead Programmer and Producer weren't entirely sure what to do, as it was extremely difficult to get a full concept of what was going on within the art team. Although the Lead Artist kept them informed of what was going on, from her point of view, there was little to no communication from Zack or Rachel in regards to the airport at all.

Just before the tenth week of development, the Lead Programmer (in his function as Technical Designer) and Producer approached the Lead Artist with their concerns over just having the airport level to exposé the games mechanics. By this point the last time any progress had been submitted on the airport level was four weeks ago, shortly after the initial block-out was shown. It was then decided that an entirely new area, the park, would be created from the initial concept pieces. The reason we decided to go with the park instead of the city, which would've highlighted the more fun mechanics of the game more, was down to the fact that Gregory had been working on assets for the park previously. The design and implemented was given to Gregory at the end of the tenth week, pressing very much

so the urgency of a testable block-out. The block-out was received two days later to a higher standard than the last airport block-out.

At this point in development Zack, Rachel and Connor stopped turning up to non-mandatory meetings and stopped communicating at all with anyone else in the team. The Lead Programmer and Producer had tried many things in order to increase the level of communication: including a weekly playable installer of the game on SkyDrive, publishing more information on the Facebook group and running more open *coding sessions* so everyone could get together and see the progress in real-time. After trying so hard and with the impending deadlines they gave up trying to include them, although they were never cut-out of the group, they stopped putting in the extra effort to get their feedback and progress reports.

In retrospect, it's very easy to see a large rift between the team members and in fact this could be seen even during the project. It wasn't until after that we could really highlight were the issues first arose and how they could've been avoided. In his personal post-mortem, Zack wrote he was unhappy with the "secretive nature of decisions made towards the game in the final 3-4 weeks". The "secretive" nature of the project wasn't clear at the time from the rest of the group, but after it's easy to see how the actions taken by the Leads could've been misconstrued as secretive. In Rachel's personal post-mortem she wrote "at times she (Stacy) was very uncompromising with things such as some of the original concepts, but didn't expand on her points just 'I don't like it'. She also left little room for any argument". This point highlights why they were upset and stopped communication with the Lead Artist, however none of this was clear at the time from any of the Leads point of view.

Rachel went on to say "(in order to improve things next time) I would probably try and voice my opinions a lot more". It seems the issue between Zack, Rachel and Stacy was the clash of personalities within the working environment. Zack and Rachel are both quite quiet people and Stacy is more loud and opinionated, which is an issue that can be addressed by giving people the space and freedom to air their opinions without the feeling of recrimination of reprimand. However, there were plenty of chances for this problem to be raised outside of meetings to any number of the team members, in order to improve the group meetings and work environment. Since they were not the issues between them were, at the time, interpreted as *bickering* or *moaning behind someone's back*; none of which is constructive or productive for the team.

3.3 In The Future

3.3.1 Use of a Standardised Art Pipeline

By creating a centralised art pipeline at the beginning of the project and communicating it to the team, the issues we encountered regarding asset submission can be avoided. SkyDrive worked well as a centralised storage and submission server, however, it would have benefited from being managed better. The folder structure could have been greatly improved. For example, art assets should have been stored in two separate folders; one for raw art assets (models, textures, etc.) and another for UDK packages. The folder containing the UDK packages would have a sub-folder structure that mimicked that of UDKs. This way, the latest packages can be easily downloaded and added to UDK by programmers. When new assets are submitted they should be uploaded to the raw asset folder. This should then be regularly downloaded to a common folder (`C:\ToC_Assets\` for example) and individual assets can be imported into UDK packages. If assets are *always* imported in this fashion then fewer issues will be encountered when newer versions of assets are submitted. This is because UDK packages maintain references to where raw assets are stored when they are imported. Whenever an asset is modified, it simply needs to be saved over the old version. UDKs easy "reimport" feature can then be used to update packages with new assets en masse. By implementing this method the build manager would have been saved much time and effort.

3.3.2 Project Management

Time management and scheduling within a group project is a very difficult thing to get right, but often comes down to early preparation. The two hardest parts of project scheduling are, firstly compiling a comprehensive list of tasks that need to be completed before the end of the project and secondly, estimating the time it should take to complete these tasks. If these two things are done right then creating a schedule becomes much easier. Unfortunately, small tasks are often overlooked when compiling the initial list and so the number of tasks to complete will often increase as the project progresses. Time has to be made for new tasks and this, consequently, impacts the schedule. Eventually the schedule becomes too saturated and features have to be dropped. By creating a more inclusive task list, this issue can be avoided. The same applies to estimating time. Team members can often run into issues when completing particularly difficult tasks. This leads to certain things taking longer than expected which, again, can impact the schedule. Unfortunately, this is something that cannot be helped.

3.3.3 Panel/Expo Feedback

Following feedback obtained from both the panel and the expo, we decided on several game design changes to make in the future. It was suggested to us by the panel that we should "get rid of the zombies", "add in stunts" and "add accelerometer support". Doing this would allow us to capitalise on the more fun aspects of the game (i.e. the driving). Adding stunts into the game was definitely something we had discussed during development and would certainly improve the player experience; unfortunately there just wasn't enough time to implement them. While we decided to against dropping the zombies completely, we did decide to dramatically alter the number of zombies and change their mechanics. Instead of having the zombies as a resource to manage and keep as low as possible, running them over would allow you to "combo" stunts or perhaps increase a stunt multiplier rewarding the player with a higher score. Adding accelerometer support would allow us to tap into the tablet market. We also decided on dropping the open world aspect of the game and instead have a series of smaller levels. This would make the game a lot less resource intensive and further our efforts to expand into the tablet market.

4. References

Hansoft, 2012. [Online]
Available at: http://www.hansoft.se/uploads/images/hansoft_logo.png
[Accessed 04 01 2013].

The Verge, 2012. [Online]
Available at:
http://cdn3.sbnation.com/entry_photo_images/7237177/skydrivelogo_large_verge_medium_landscape.jpg
[Accessed 14 01 2013].

5. Appendices

5.1 Chris Rogers – Personal Post-Mortem

5.1.1 Personal Details

Student #	100071945
Name	Chris Rogers
Team Name	A Tyre of Chaos
Role	Code Monkey

Please complete this **individually**.

5.1.2 Port-Mortem

What were the aims and objectives of this project?

To create a game that allowed the player to drive around a zombie infested city doing missions and completing objectives to upgrade their car to the point that they are able to escape the city on the collapsed bridge, the game should include:
-Ability to drive a car and run down zombies.
-Scrap resource to upgrade/repair car.
-Upgrades to cars such as weapons or boost.
-Missions to unlock upgrades for the player and allow progress through the game.
-Procedurally spawning zombies.
-Day night cycle that effects zombie spawn rate/behaviour.

What did you contribute to the group?

My original role in the group was programmer in charge of NPCs along with other small programming tasks. With this I created the zombies and their AI, worked on basic intractable environment physics and mechanisms, created the save system to save the player's data and the garage classes to allow a player to interact with the garage and reset themselves and the level (using saves where necessary). Later on I also took up a role as build manager I would get the levels/art assets from the artist and convert/compile them to work with the code so there would be a build (generally updated at least weekly) for the programmers to test their code on. With this I also managed certain content pipelines for any artists unfamiliar with the pipeline needed to get assets from PS/Maya into UDK.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)

-Programmed Zombies and their AI, this was done using the UDK pawn classes and basic controllers (later adapted by Sam Albon to be lower level and remove unnecessary header info) as well as the code needed to make them spawn procedurally using spawn locations (that can be designated by the level designer) and spawn areas.
-Created intractable environments, using UDKs Kactor class I created certain assets into interact able environments using physical materials to edit their properties to be more appropriate to item the art was representing.
-Regularly compiled assets into a workable level, for this I would get the art assets/levels from the artist and merge them into a single workable level/package in UDK form and throw in any classes needed for the code to work with the level.
-Expanded the airport level geometrically, with a confusion between certain team members and the rest of the team the airport was a lot smaller and generally boring level design speaking also with viewing/physical boundaries so I had to expand the airport to be bigger with more areas to drive around and create a tree boundary to stop the player moving out of the level or seeing boundaries such as terrain edges or the bottom of the sky dome.
-Post process outlining effect, for this I used a basic algorithm known as sobel edge to detect the edges of objects in the world based on lighting differences and then draw a black edge on them to give the cartoonish outline effect. This was done in the UDK material editor, using their GUI based scripting to create the material for the post process.
-Save files and Resets, For this I created a simple save file structure that would save certain data to the file ready to be recovered for later use and reset the player if they die/lose the game. I also created the garage classes to allow the player to go into the garage menu/save and give a point for the player to be reset to when loading a save file.

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	1st	Worked well with the group, handled documentation and design aspects well with good communication with group so everyone was involved (if they wanted to be). Worked well with coding team to implement several features that tied in well with existing and future code.
Gregory Drake	1st	Was extremely hard working, took on many additional tasks that where thrown at him during development cycle including creating extra environments and helping other artists with various tasks including the pipline between UDK/Maya and rigging. I worked closely with him in the last few weeks as he took over level creation and was always good at communication and making sure I was up to date with what was happening which helped greatly with working out what we had time for in the final weeks when time got tight.
Connor Enderby	2.2	Seemed to not do much work during early weeks, but did pick up his game in later weeks and developed animations and the garage scene for the menu and helped mock up basic UI elements. Not great communication with the team across the board and missed a few meetings.
Declan Fay	1st	Great communication with the rest of the coding team, always showed up to set meetings and was always there to at least give input when we had group development sessions (with uni lacking in flash availability often couldn't actually do development with us in uni itself). Did a good job developing the HUD and getting it to work well with the game code and came up with our original starting game concept.
Zack Ford	3rd	Zack was in charge of developing the airport, at first it took a while for him to get the basic blockout to us and he was good at getting it expanded for the next week when we decided it was too short. But after that either communication broke down (not helped by his inability to communicate well with the Stacey or Sean during meetings) or some other issue but development for airport seemed to stop and he just created assets that he submitted to myself on the deadline, leaving me and Greg with the task of demanding the airport to an acceptable level.
Rachel Forde	N/A	I do not feel comfortable commenting on Rachels work, as far as I can tell she helped Zack with the airport but was not good at communicating with the rest of the team outside of Zack, so I have no idea what was actually her work.
Stacy Kershaw	1st	Worked well with the other artists and had a good communication with the coding half of the development team. Did a good job developing the zombie models given limited time and made them fit in well with the style and stick to the concepts created. Also helped out with assets in park and was able to develop HUD elements for the development team last minute when it was delayed. Was also very persistent in tasks that where often challenging
Chris Rogers	N/A	N/A
Sean Smithson	1st	Took on a significant amount of the coding including developing the vehicles and physics needed for each one along with the upgrade system and weapons/boost needed for the game. Had good communication with the team including the artists doing the vehicle to keep development fast and smooth.
Jack Walker	1st	Jacks primary role was to create the different vehicles and he did a fantastic job making them and rigging them ready to hand over to sean for game implementation. He also developed marketing material and posters needed for the expo and generally took on any art jobs that where needed of him such as making the bridge of texturing airport assets for milestone 2.

What do you consider to be the most successful aspects of the project and how were these achieved?

The most successful aspect of the game in my opinion is the driving gameplay, the mixture of dodge with guns and mini with nitros gives a good comparison of play styles and each have different physics applied. The mini makes it fun to attack every bump in an attempt to see the car go flying and the dodge's slower bulkier turning with guns makes it more fun to attach zombies and attempt general story gameplay.

I also consider the art style to be a success it was kept consistent and I felt the final product looked good and keeping with originally concepted ideas.

What do you consider to be the least successful aspects of the project and what went wrong?

One of the least successful parts of the project was the open ended level itself, if things where better planned from the beginning I believe it would have been possible to get the open areas in that we originally planned, but bad planning from the start led to a much smaller under polished level without the city itself which in my opinion is the main area that should have been developed.

Another aspect that was a failure was the content pipeline and management, the Maya UDK pipeline itself can be a pain but there was no standard set forth which made it more of a pain then before, that coupled with a lack of system set it place for content versioning made it a slow and painful process to compile every week.

How would you minimise or avoid these failures in the future? (personal and project-wide)

Assign team members better, in future a better judgement of peoples skills inside the team and assigning jobs according to that (not just what they wanted to personally do) would help significantly with making things run smoothly and getting more of the levels done.

Also better planned out pipelines would help, having a proper procedure and naming conventions set up for artists to get there work into the main packages. For example have it so every artist has to export their work from maya into UDK including textures and get the models and materials set up in pre-defined groupings and then have them upload there work in a package called ToC_Content_ARTISTNAME so it can then be very easily moved to a more appropriate folder by the content manager.

The central storage I believe could also have been set up better, for example using a FTP account everyone has access to we could make sure raw assets (FBX/TGA etc) are stored there in pre-defined folders so if anything changes the artist just has to override their work and the content manager just has to click re-import inside UDK.

5.2 Connor Enderby – Personal Post-Mortem

5.2.1 Personal Details

Student #	100131474
Name	Connor Enderby
Team Name	A Tyre of Chaos
Role	Animator/HUD Design

Please complete this **individually**.

5.2.2 Port-Mortem

What were the aims and objectives of this project?

What did you contribute to the group?
Throughout my time in this group, I was helping Zak and Rachel with the initial set up and creation of the Airport, I created the luggage tram, the Airplane as well as the radar tower. I created the final walking and attack animations. I also worked with Declan on the initial HUD design for the garage, which I also built and textured the garage scene for the upgrade section of the game.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
Creation and texturing the garage scene for upgrades
Created initial HUD
3 separate walking animations
3 separate attack animations
Luggage cart (passed onto Zak to check poly's etc.)
Base airplane (passed onto Zak to check poly's etc.)
Created and textured radar tower (passed onto Zak to check poly's etc.)

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon		Would not listen to, advice from tutors. Constantly went behind several artists back to change many parts of the game, acted more like artist leader than, what he should have been doing.
Gregory Drake		Worked hard. I feel picked up most of stacy's work.
Connor Enderby		Admittedly was late on the occasional deadline. Still got work completed.
Declan Fay		Worked well, understood initial concept for HUD
Zack Ford		Worked well creating the airport scene. Co-operative throughout.
Rachel Forde		Worked well on the airport scene with zak.
Stacy Kershaw		Poor artist leader, several times was unsure on what how to "lead". Was delayed with creating and finishing the main character, didn't communicate with several parts of the artists, spent more time communicating with programmers. Asked upon what she wanted for set, animations for the zombies got a reply of "do generic zombies".
Chris Rogers		Did a exceptional job of building the levels.
Sean Smithson		Worked well
Jack Walker		Did a great job of creating, texturing and rigging the player vehicles.

What do you consider to be the most successful aspects of the project and how were these achieved?
That in the end, I would say we finally come together in a fashion as a group to complete the game before the deadline and expo. Somewhere a equilibrium happened and several problems disappeared.

What do you consider to be the least successful aspects of the project and what went wrong?
At the start of the development time keeping and planning were the weakest points, near the end there was some improvement overall, having the art style changed and many factors added into the game without consideration and overall discussion in the group. Having the programmers interfere with the art style on several occasions. Felt there was secretive nature among the parts of the game, such as elemental zombie I felt they just appeared out of thin air. Many times we were advised to "scale" the game down as the initial plan was large, and may not of been complete within the designated time scale we had.

How would you minimise or avoid these failures in the future? (personal and project-wide)
Probably open my mouth instead of nodding and just carrying on with the work.

5.3 Declan Fay – Personal Post-Mortem

5.3.1 Personal Details

Student #	100126994
Name	Declan Fay
Team Name	A Tyre of Chaos
Role	Programmer

Please complete this **individually**.

5.3.2 Post-Mortem

What were the aims and objectives of this project?
To create a game in the Unreal Engine that was based around zombies and time. We decided as a group to take this and make a driving game in a free roam world. You will have the ability to change cars, add weapons and upgrade the general stats such as speed and armour. The general aim of our game is to complete missions to gain enough money to upgrade your car to a suitable level to be able to escape the city. This is achievable by jumping a broken bridge that takes you out of the city, however if you were to fail the jump you fall and die so you need to make your vehicle as fast as possible before you try.

What did you contribute to the group?
My main contribution to the group was creating all of the user interfaces and the heads up display (HUD) using scale form and flash.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
HUD – Displays the user's stats in game including amount of zombies killed, the amount of zombies left, amount of scrap collected, a health bar and a speedometer. Main Menu – Starting screen of the game, allows you to select between Story Mode, Arcade Mode or exit the game. Garage – Gives the ability to switch between cars, buy the vehicles special feature (e.g. Guns), upgrade the 5 aspects of each vehicle (Acceleration, Armour, Braking, Max Speed and Steering) and also repair your car. Scores / Death Screen – Upon dying the death screen will be shown displaying your overall score and various statistics of your time playing such as how long you survived, amount of zombies you killed and the fastest speed achieved. This menu then also gives you the ability to reload the game or quit. Cheat Codes – Codes that you are able to type into the garage menu to instantly unlock various features (such as extra cars or more money), this was mainly added just for debug purposed to save time on completing missions or collecting scrap to test out various features. Vehicles – Created the base vehicle classes that attach the player pawn to a custom car on start-up so when a player starts the game they will be in a vehicle rather than the standard character. Bugs – Play testing the game to try and exploit different features such as jumps or trying to get the game to crash so these issues could be fixed before other people were to play the game.

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	1st	Given the task of creating the missions for the game, which are to a suitable standard and work as intended. Also took care of the majority of the documentation for this project and generally had a strong work ethic
Gregory Drake	1st	Was originally given the role to create art assets to decorate the game and fill it out more. Then also took on the role of creating the park environment and upgrading the airport level as what was first created wasn't a good enough standard and couldn't really be classed as a free roam world as it was to small.
Connor Enderby	3rd	Didn't seem to produce half as much work as other artists, and the quality of work that was provided was a lower quality and a lot of this had to be completed replaced.
Declan Fay	1st	Although I may not have put in as many features as the other programmers. I feel that I still put in the same amount of time getting the HUD to function correctly, as debugging scaleform is awkward and setting up the ability to send and receive variables from Unrealscript and Actionscript took a while to set up correctly.
Zack Ford	3rd	Was given the task of creating the level environment, however the work produced was of a poor quality and the level that was provided wasn't anywhere near big enough for what we previously discussed
Rachel Forde	3rd	Was also given the task of helping with the level environment and creating assets for it so the same issues also apply as above.
Stacy Kershaw	1st	Had the task of creating the characters and zombies which all worked as intended and then took over the role of designing the user interface as the one provided originally wasn't up to scratch.
Chris Rogers	1st	Given the task of creating the AI for the zombies which all seemed to work without any bugs. Chris then also took on the role of helping out the artists and helping to finish off the environment as we only had 3 active artists towards the end of our project
Sean Smithson	1st	Sean implemented the Time of day aspects to our game which contruibed towards the Time element of the game we were required to implement and also took over handling the vehicles and the ability to upgrade the stats on them.
Jack Walker	1st	Designed and rigged multiple cars for our game which all worked as intended, generally had a strong work ethic and was always available to help out with anything else.

What do you consider to be the most successful aspects of the project and how were these achieved?
Personally I think all of the implemented features of the game should be classed as the most successful aspects of the project. Everything that has been implemented all works with a minimum amount of bugs. The most impressive I think is the free roam map works exceptionally well as there is a lot of room for finding errors when dealing with large maps but after a lot of experimenting I think we have patched most of the bugs with it.

What do you consider to be the least successful aspects of the project and what went wrong?
I think the least successful aspects of this project were the communication between group members. This being that some people were not turning up to the meetings and when they were they weren't really involved in the group discussions. Due to these issues some of the deadlines we set ourselves weren't completed on time and resulted in some of the game features we wanted to implement being cut due to issues with time.

How would you minimise or avoid these failures in the future? (personal and project-wide)
I think next time I am involved in a group project we need be more careful with who we decide to work with, even though we had a group of 10 people. I feel only 7 members put in a reasonable amount of effort to the project so I think this definitely needs to be taken into consideration next time. I also think that the game idea we decided on (a free roam map) was a bit too ambitious as not all of the features we have originally planned made it into the game due to time issues and the fact that the map had to be large the loading times of the game take a while due to rending so much at any one time.

5.4 Gregorgy Drake – Personal Post-Mortem

5.4.1 Personal Details

Student #	100179220
Name	Gregory Drake
Team Name	A Tyre of Chaos
Role	Artist

Please complete this **individually**.

5.4.2 Post-Mortem

What were the aims and objectives of this project?
The aim of this project was to create a vertical slice of a beta standard game based on the theme of Zombies vs time. The art theme was established as cartoon style, including black lines and simple colours. The objective of the game was to upgrade your vehicle to escape the city over the broken bridge. This would have been through the collection of scrap to upgrade your vehicles and missions to unlock ones.

What did you contribute to the group?
I worked on the initial cel shader material, created all the trees and hedges/bushes; the park block out; Skydome material; water material; café building; vendor buildings; park wall and decals; and rocks. In addition, I implemented all the assets into: the park map and the road, and extra work on the airport. I created all the concept art for the park, the foliage and two zombies for the first milestone. I worked on character rigging and weighting as well. HUD was also created.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)

- Concept art – created concept art for various foliage and park assets in various styles that fit the cartoony with black lines style. 2 Zombies concepts were also created closer to the first milestone deadline. A concept/illustration of a view in the park was also created in the desired style.
- Created cel shader – researched and create a material that created cel shading within UDK. This was done straight after milestone to avoid problems later in the project.
- Created trees – created trees within the art style while keeping them as low-poly as possible.
- Create hedges/bushes – Created hedges and bushes with the art style while keeping them low-poly
- Park block out – created the blockout of the park after the second milestone which included tree lines, buildings, and where the water would be located.
- Park buildings – buildings designed for the park while keeping with the art style and theme of the park.
- Rocks – with a colour variation material to avoid them becoming bland and repetitive quickly.
- Sky dome material and Water material – the sky dome material was created so it would animate different layers of clouds while been designed so each different element of the material can be changed with ease, within an instance of the material. The water material works in the same way making it easier for the programmers to change and alter the material.
- Hue variation material that was implemented on some of the foliage and rocks – A material that creates minor colour variation depending on position and rotation if the mesh is not uniform in shape.
- Remodelled and textured airplane based on existing model
- Wall- with stone decals for detail
- Implemented all assets into park
- Rigged and weighted character models – worked with Stacy on creating a base character mesh t be rigged and weighted for animation and further modelling.
- HUD- created it in Photoshop then passed on to programmers to be implemented

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	1st	Good lead programmer, good mediator
Gregory Drake	1st	Did a large proportion of work on time or ahead of schedule, good work quality, took initiative
Connor Enderby	f-3rd	Limited amount of work, lack of communication, poor work quality
Declan Fay	1st	Good work, focused on GUI and HUD
Zack Ford	F-3rd	Lack of communication, limited amount of work which was poor quality, disappeared after the stand was set up at the exposition
Rachel Forde	F-3rd	No work seen after concepts, lack of communication, disappeared after the stand was set up at the exposition
Stacy Kershaw	1st	Produced good art work
Chris Rogers	1st	Helped out with some art elements, good work
Sean Smithson	1st	Persevered with car issues, good work
Jack Walker	1st	Persevered with car issues, produced good art work

What do you consider to be the most successful aspects of the project and how were these achieved?
Pleased with how some elements developed (the park, water, sky dome, car, zombies), the game worked

What do you consider to be the least successful aspects of the project and what went wrong?
Did not achieve initial aim of creating three areas; have not got the full range of vehicle upgrades wanted; inefficient personnel;

How would you minimise or avoid these failures in the future? (personal and project-wide)
Rearrange work load; not be as ambitious with overall game map; chase people more to keep to deadlines.

5.5 Jack Walker – Personal Post-Mortem

5.5.1 Personal Details

Student #	100143537
Name	Jack Walker
Team Name	A Tyre of Chaos
Role	Vehicle / Prop Artist

*Please complete this **individually**.*

5.5.2 Post-Mortem

What were the aims and objectives of this project?

What did you contribute to the group?
Throughout my time in this group, I feel as though that I helped in most aspects of the artistic side of the game. I created objects to do with missions, random pick-ups, parts of the environment as well as both player vehicles and anything I didn't create I had some form of feed-back and advice towards them.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
Creation, texturing and rigging of 2 functional player vehicles, Small class, medium class and machine gun weapon. Creation and texturing of props: Scrap pieces, 2 mission starts (clip board and Zombie head on spike), "research mission" objectives (bio-hazard vial and schematic), Stair car (acting ramp within the airport environment), Low poly vehicle versions of small and medium cars, Crate. Creation and texturing of environment pieces: The bridge (the broken suspension bridge), Wire fences, Concrete road barrier,

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon		
Gregory Drake		
Connor Enderby		
Declan Fay		
Zack Ford		
Rachel Forde		
Stacy Kershaw		
Chris Rogers		
Sean Smithson		
Jack Walker		

What do you consider to be the most successful aspects of the project and how were these achieved?

What do you consider to be the least successful aspects of the project and what went wrong?
The time keeping and planning were the weakest points of the overall project. The start of the project was really quite unorganised, with lack of conceptualisation of the art alongside uncooperative members of the group made project get off to a very slow and overly complicated start on the art side.

How would you minimise or avoid these failures in the future? (personal and project-wide)

5.6 Rachel Forde – Personal Post-Mortem

5.6.1 Personal Details

Student #	100114420
Name	Rachel Forde
Team Name	A Tyre of Chaos
Role	Environmental Artist

Please complete this **individually**.

5.6.2 Post-Mortem

What did you contribute to the group?
I was one of the environment artists working on assets for the airport. I focused more on smaller assets.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
Cars in the car park and the surrounding area Ticket barriers- these were to be used to prevent the player going outside the boundaries of the level. Pay machines- Reminiscent of the ones used in Pay and Display car parks Lamp posts- there were two varieties one normal one for lighting the scene and others done as lights from zebra crossings Hangar Main Airport building

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	2	I was annoyed that he did not choose to be a part of our group during the expo and instead focused on promoting his own game, something that had nothing to do with the project, including putting cards on our table to try and help promote it. Considering he was the Lead Programmer and Technical Designer of our group I thought it unprofessional.
Gregory Drake	1	Greg did a good job and contributed a lot to the project especially with having to spend a lot of time helping Stacy with her character as well as his own tasks on the park.
Connor Enderby	2	With the animation Connor did a good job with what he had been given despite there being not many points of articulation for him to work with on the rig.
Declan Fay	1	
Zack Ford	2	
Rachel Forde	2	I feel I was a good team player for this project, I attempted to contribute in team discussions as well as early concepts and did work as instructed.
Stacy Kershaw	3	As her role as the lead artist I felt that her communication was lacking. At times she was very uncompromising with things such as some of the original concepts, but didn't expand on her points just 'I don't like it'. She also left little room for any argument, declaring herself as character artist before we even thought about assigning roles to each other, or discussion from other people, despite some points being for the better of the game as well as with the initial game idea 'I'm not agreeing with it unless I can do chibis.'
Chris Rogers	1	
Sean Smithson	1	
Jack Walker	1	Jack did a great job with the vehicles and they looked really good in-game

What do you consider to be the most successful aspects of the project and how were these achieved?

This project made me realise how long a game, even a working demo must take to develop in the industry and after only having twelve weeks to work on it I think it being playable with no noticeable bugs and to be able to present it to others in an expo is the most successful part.

What do you consider to be the least successful aspects of the project and what went wrong?

Communication was probably the worst part. Points that were made by some members in response to things were sometimes ignored, direction sometimes was lost because things were changed or decided upon without some members of the group being informed.

How would you minimise or avoid these failures in the future? (personal and project-wide)

I would probably try and voice my opinions a lot more strongly and try not to care about keeping harmony in the group. Although getting along in a group is probably an important thing, I think now it's probably more important for the end result a project can be criticised for good as well as bad for the sake of the whole project.

5.7 Sean Smithson – Personal Post-Mortem

5.7.2 Personal Details

Student #	100127775
Name	Sean Smithson
Team Name	A Tyre of Chaos
Role	Producer/ Programmer

5.7.1 Post-Mortem

What were the aims and objectives of this project?
The aim of this project was to design and create a game, within 12 weeks, that adhered to a specific theme; zombies and time. After the game idea was conceived, we set about designing the mechanics and features of the game and implementing them. The initial idea was to create a free roam driving game, in which the player would drive around and run over zombies. During the day zombies would be fairly docile, while at night time they would become more aggressive and powerful.

What did you contribute to the group?
I had contributed to the group as both producer and programmer.
As a producer, I created and managed a project schedule. Semi-weekly meetings were organised, to ensure that all members of the team were made aware of the state of the project and the work that was to completed that week.
As a programmer, I contributed mostly towards the vehicle features within the game. This included importing vehicle skeletal meshes, programming controls, physics, and the upgrade system. I also programmed the day/night cycle, as well as some other generic gameplay features.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)

This is a list of the things I contributed to each class.

ToC_DynamicDominantDirectionalLight.uc
   -All
ToC_Environment.uc
   -Game State enumeration (menu, in game, game over) and switching.
   -Clean up / reinitialisation on garage enter / exit
   -Global player statistics and scoring
   -Spawning time of day based lighting
ToC_Game.uc
   -Spawning environment class on start up.
ToC_Pawn.uc
   -Implemented skeletal mesh and anim tree.
ToC_PlayerController.uc
   -Controls (all driving and camera controls, not menu controls).
   -Vehicle spawning and controller possession
   -Potential vehicle array, vehicle switching subsystem, vehicle upgrade subsystem.
   -Stopped driver from leaving vehicle
   -Cleaning an initialisation when restarting the game.
ToC_Projectile.uc
   -All
ToC_ProjectileBullet.uc
   -All
ToC_SkyDome.uc
   -All
ToC_TimeOfDay.uc
   -All
ToC_Vehicle.uc
   -All
ToC_VehicleArmoured.uc
   -All
ToC_VehicleBalanved.uc
   -All
ToC_VehicleCamera.uc
   -All
ToC_VehicleFast.uc
   -All

I also imported the vehicle skeletal meshes in to UDK packages.

The grades I have given here a based purely on the effort that each team member contributed.

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	1st	Wrote all mission code. Technical designer. Wrote documentation. Strong work ethic. Professional.
Gregory Drake	1st	Created the park area. Created the area between airport and park. Finalised and polished airport. Helped Stacy rig zombies. Worked closely with Chris who needed specific things adding to the level for programming reasons. Created dynamic skydome. Strong work ethic. Professional.
Connor Enderby	3rd	Animated zombies. Created garage scene. Created original 2D garage HUD, which didn't fit art style and had to be passed on to Stacy. Hardly communicated throughout project. Unprofessional.
Declan Fay	1st	Strong work ethic. Professional. Flash action-script specialist. Wrote all the HUD code.
Zack Ford	3rd	Worked on the airport. Was late with the original block out. Hardly communicated throughout project. Delivered airport assets on time, but they weren't built into a level. Unprofessional.
Rachel Forde	3rd	Worked on the airport assets. Hardly communicated throughout project. Delivered airport assets on time, but they weren't built into a level. Unprofessional.
Stacy Kershaw	1st	Had issues with character rigging but worked hard to get them done. Worked with Greg on park level props. Took over 2D garage and menu HUDs from Connor. Completed everything and delivered on time. Strong work ethic. Professional.
Chris Rogers	1st	Contributed a lot of work. Implemented all the AI. Compiled a lot of art into packages. Helped to create the level and added specific actor classes into the level. Strong work ethic. Professional.
Sean Smithson	1st	Strong work ethic. Professional.
Jack Walker	1st	Ran into issues with vehicle rigging, but worked hard top get them done. Created mounted machine gun meshes. Created road level props. Created mission props. Created promotional material. Communicated well with me regarding vehicles. Strong work ethic. Professional.

What do you consider to be the most successful aspects of the project and how were these achieved?

The level eventually took shape after Greg and Chris worked extensively on merging the park and airport scenes together. It now looks very good and feels good to drive around.

The day night cycle, I feel, is very pretty. It works using a rotating directional light, which casts dynamic show across the level. Coupled with the dynamic sky dome created by Greg it works really well with the level.

I also feel that game is fairly fun to play. Driving around and running over zombies is fun and when combined with scoring system it can add an element of competition.

What do you consider to be the least successful aspects of the project and what went wrong?

Project Management
As previously stated, I was the projects manager and thus it was my job to ensure that aspects of the project were completed according to schedule. Meetings were set up twice a week to ensure that everybody knew where the project was and the tasks that they should complete that week. While this was certainly the intention, there were several occasions where work was not completed. The reasons for this ranged from;
*   -Running into issues completing a particular task*
*   -Who was supposed to complete a particular task was, apparently, not communicated*
*   -The task was simply just not completed on time*
While the first issue is unavoidable, the later two are not.

Vehicle Issues
Having never worked with the unreal engines vehicle system before, Jack and I ran into a few issues when implementing vehicles. Vehicles have to be rigged and oriented a specific way before they import correctly into UDK. Unfortunately neither of us did our research on this and so of course, importing the vehicles took longer than expected.

How would you minimise or avoid these failures in the future? (personal and project-wide)

Project Management
The two main issues with project management are:
*   -Compiling a list of every task that must be completed*
*   -Estimating the time it should take to complete a task*
Once these things have been compiled/estimated creating a schedule is fairly easy.

Unfortunately, small tasks are often overlooked when compiling the initial list and so the number of tasks to complete will often increase as the project progresses. Time has to be made for these new tasks and this bites into the schedule. Eventually the schedule becomes too saturated and features have to be dropped. By creating a more inclusive task list, this issue can be avoided. The same applies to estimating time. If time taken to complete a task is underestimated then this again can affect the schedule.

5.8 Stacy Kershaw – Personal Post-Mortem

5.8.1 Personal Details

Student #	100135119
Name	Stacy Kershaw
Team Name	A Tyre of Chaos
Role	Lead Artist

*Please complete this **individually**.*

5.8.2 Post-Mortem

What were the aims and objectives of this project?
The main objective of this project was to create a working game that is fun to play. The other objectives were to create a large, free-roam world in a chibi style. We wanted certain gameplay features as well such as: Car customisation. Missions. Day/night cycle with varying difficulties for the zombies. Resource management. Unlockable vehicles.

What did you contribute to the group?
I completed most tasks on time and to a good standard.

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
Completed three zombies. Created the main character. Created the fish. Animated the fish. Created some of the park assets. Created the menus.

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	1st	**Positives:** Programmed every mission. Took on all the documentation. Wrote/presented all the presentations. Great communication for most of the project. Was very professional. Helped me deal with Zak when I was struggling. Wasn't at the stall at the expo because he had his Space Salvager stall on his own but still tried to advertise/direct people to our stall. **Negatives:** Lost communication with the artists for two weeks.

Gregory Drake	1st	**Positives:** Completed the entire park within an excellent amount of time. Helped greatly with the airport. Created all particle effects. Helped others to the best of his ability when they got stuck (me with rigging). Did the gameplay HUD. Made the water. Made the skydome. Very professional. Great communication throughout the entire project. Worked well with the group at the expo. I have no negative comments to say.
Connor Enderby	3rd	**Positives:** Created the garage scene. Created the baggage cart. Animated the zombies. Worked well with the group at the expo. **Negatives:** He did do the menus but they were not in the style of the game and we didn't end up using them. Models were not correctly done (too many polys, some polys were more than 4 sided). Made excuses to not do anything apart from animations. Lack of communication. Didn't scale models correctly. (As far as I am aware) Only did one concept. Missed every deadline. Didn't use the pipeline. Stopped coming to meetings after week 9. Very unprofessional.
Declan Fay	1st	**Positives:** Programmed the HUD. The original game idea was his. Did all the action-script/unreal script interfaces. Great communication. Professional. Handled Q&A well. Worked well with the group at the expo. **Negatives:** Took too long doing the action-script/unreal script interfaces.

Zack Ford	3rd	**Positives:** Submitted airport assets on time. **Negatives:** Argued with group members. Level blockout was 7 weeks late. Didn't produce a final level. Refused to talk at group meetings. Refused to communicate with me (lead artist). Didn't use the pipeline. Models were not scaled. Stopped showing up to meetings after week 10. No collision meshes on blockout. Only communicated with Chris. Milestone 2 assets were not UV'd. He insisted on doing environments and then complained that I forced him to do this. He refused to concept anything. Focused too much on stuff that doesn't matter. His negative criticism was not constructive. Extremely unprofessional. Didn't talk/contribute in most meetings. During the expo he didn't take care of the stall (I offered twice).
Rachel Forde	3rd	**Positives:** Did most of/all of airport assets. Even though it wasn't built she concepted the city. **Negatives:** Very little communication. Nobody knows what work she actually did. Refused to speak to me (lead artist). Didn't use the pipeline. Unprofessional. Didn't talk/contribute during meetings. Stopped coming to meetings after week 10. During the expo she didn't take care of the stall (I offered twice).
Stacy Kershaw	1st	**Positives:** Completed three zombies. Created the main character. Created the fish. Animated the fish. Created some of the park assets. Created the menus. Good communication. Worked well with the group at the expo. Professional (apart from one instance). **Negatives:** I lost my temper with Zak and handled the situation unprofessionally.

Chris Rogers	1st	**Positives:** Ended up doing the initial animations. Ended up helping with the airport: extended it and fixed parts of it. Fixed most of the bugs. Sourced original particle effects. Wrote the AI. He managed all the art assets. Dealt with Zak with the airport. Wrote all the game actors/controllers. Wrote all the spawning logic. Great communication. Professional. Worked well with the group at the expo. **Negatives:** Took too long with the post-process effects. Crossed over to the art side of things a little too much.
Sean Smithson	1st	**Positives:** Wrote most of the vehicle code. Wrote the physics. Wrote the upgrade system. Wrote the time of day system. Wrote the driving controls. Wrote the scoring system. Rigged vehicle skeletal meshes. Sorted the marketing for the expo. Great communication. Professional. Worked well with the group at the expo. **Negatives:** Didn't do well as project manager.
Jack Walker	1st	**Positives:** Modelled and rigged both vehicles. Animated the character sat in the vehicle. Created the road props. Created some of the airport assets. Created mission props. Created all promo material (posters, cutout). Concepted the vehicles. Very professional. Great communication. Worked well with the group at the expo. I have nothing negative to say.

What do you consider to be the most successful aspects of the project and how were these achieved?

Driving Experience
- Completed customised the engine vehicle system
- Speed/handling smooth
- Level designed as a figure of eight
- Weapon system gives a good feeling
- Developed using iterative Q&A

Art Style
- Communicated with each other well
- Post-process really highlights things well
- Successful distinct colour palette between levels

Zombies
- Progression of difficulty is reflected with the level design
- Adds a tactical element with special zombies
- Day/Night cycle really adds an element of fear

What do you consider to be the least successful aspects of the project and what went wrong?

Art Pipeline
- Should have been more organised from the start.
- Should have stated naming conventions.
- Package management.
- Storage conventions.
- Should have saved previous versions of everything.

Project Management
- Should have spent a little more time on the planning at the start.
- Meetings didn't have enough direction.
- Issues were overlooked when scheduled (lack of foresight).
- Task allocation was not managed correctly.
- Tasks were not completed on time and not responded to.

Open World
- Was too much to take on in 12 weeks.
- Level design was given to the wrong person.
- Mission progression for an open world was overlooked.
- Key game design opportunities were overlooked.
- City was dropped when it should not have been.
- The airport should have been the area to get dropped.
- Creating the park so late was risky.

How would you minimise or avoid these failures in the future? (personal and project-wide)
- More careful critical evaluation of team members skills and interests relevant to job allocation.
- Project management.
- List all tasks for each sprint.
- Estimate time for each task.
- Weekly builds so everyone can see where we are.
- Alpha feature deadline.
- Level blockout earlier.
- More cooperation and communication between members.
- More research into how UDK handles vehicles.
- A lot more concept work at the start.

5.9 Zack Forde – Personal Post-Mortem

5.9.1 Personal Details

Student #	100172911
Name	Zak Forde
Team Name	A Tyre of Chaos
Role	Modeller

*Please complete this **individually**.*

5.9.2 Post-Mortem

What were the aims and objectives of this project?
N/A

What did you contribute to the group?
Airport concept, 3d models for airport, UDK blockout,

List all the tasks that you completed, with as much detail as possible. (add more lines if necessary)
Concept art for the airport, and main concept image used as splash screen/promotional for our game, level design for the airport, UDK blockout of airport with terrain, basic placeholder models of objects for airport, final models and textures for airport. Specifically model-wise including updates and redos: terrain, garage outer, tower building, cones, main cart for baggage, suitcases, modular building with windows, airport main building 1.

What classification would you give everyone and why? (be as objective and fair as possible)		
Sam Albon	2	Seemed to be a ghost some of the time, and project leader at other times. Game design ideas I felt were flawed and ill thought out. Led us onto ideas that were a waste of our time. Didn't seem to understand time constraints kept bigging up project for more.. which I felt spread out development too thinly and we had 3 poorly optimized, rushed area rather than 1 area done nicely polished, bug free, and therefore a better "game" to show for 12 weeks work.
Gregory Drake	1	Hard worker, even took on tasks that were left to other team members when he really needn't to ethically.
Connor Enderby	2	While working on airport models and concept art, he was slow and unreliable but at least some results were made. As for animation, I felt he did the best he could with what he was given to work on.
Declan Fay	1	Hard worker,
Zack Ford	2	because during the last 4 weeks, I really took the teams "rubbish" personally. I truly felt passionate about the project but week on week it was rubbed away and I therefore had less motivation towards work than perhaps I could have. Could carry on but I feel what is the point, 12 weeks of comments, insights ignored why would I be listened to now.
Rachel Forde	2	Worked at a steady pace alongside me on the airport models, textures.
Stacy Kershaw	3	No matter what I write it will be taken personally. Art decisions as "art

		leader" (a role designated by one person and not the artists on a whole in the beginning) I felt the art style had some compelling points in the concept stage, but was just changed towards a style of her own preference even if it directly contradicted the older ideas concepts discussed. I get the blame for the chibi zombies… I was simply misunderstood it seems when I described them. To be blunt, they look ridiculous, no hands or feet, heads like "hey Arnold" which left the rigging/animator with not much to work with. In the end they do not look like zombies in our environment, their features are hard to recognise while playing so I think they failed at their core. [*unreferenced image*] Rachel, connor and I wanted something in the direction of this yoda style here. Head is clear and large enough to see, the face is flatter enabling you to see its facial features/mouth etc. Hands and feet, give the animator more to work with and therefore could have made the animations themselves of the zombies more expressive. Comments on the floor of the expo while I was hanging around were… "they look like mushrooms" "are they supposed to be zombies"? Connor, Rachel and I had been making comments/remarks about the zombies design for many weeks. I hope ive worded this okay and its not going to be taken too personally. I do apologise if its been taken that way. My second point to make on the role of art leader that was given to her, if her indecisiveness for the style of the game world. Invader zim was one of our main concept points/styles to look at, yet week 4-5 onwards that seemed to be scrapped, objects we were making were touted as too high poly, all of which led us to think the art leader didn't truly understand the art style we had chosen at the concept stage or was trying to change it. The art style was chosen to have no normal maps, only diffuse, saving a lot in terms of optimisation, the textures could be lower resolution because of their block colour style, and lastly the models would have more polys making them "smoother" as a part of the style. The confusing direction us artists were given did make things difficult and get a bit stressed. Increasingly stressful was to see in the later stages of the development… a new environment is suddenly made… and high poly trees are literally carpet bombed all over the level. What on earth! Just did not understand this contradiction. Again do not take this personally, and me writing 3 paragraphs about this section is not representative of my feelings on you stacy. I just want to make sure my thoughts on this are worded as fully as possible to try and avoid any social repercussions.
Chris Rogers	1	Hard worker
Sean Smithson	1	Hard worker
Jack Walker	1	Exceptional worker, his tasks were completed well and he put in a lot of work for extras.

What do you consider to be the most successful aspects of the project and how were these achieved?

Car was pretty awesome, and the fact the game ran mostly bug free at expo was also great and a testament to the programmers ☺

What do you consider to be the least successful aspects of the project and what went wrong?

Game optimisation, leadership roles and decisions, planning, day/night cycle, secretive nature of decisions made towards the game in the final 3-4 weeks, art style etc. I think those chosen for the two "leadership" roles was ill thought out, and their decisions affected the game and the morale of a lot of the team. My thoughts on day and light cycle are that it was a bad decision because it affected art style too much, I genuinely feel minusing this feature would have made the game look brilliant in the end. I can attempt to explain the latter point in more depth if necessary.

How would you minimise or avoid these failures in the future? (personal and project-wide)

Better team leaders chosen, make sure plans and concepts are stuck to. In my view we should have chosen our game purpose and main mechanics *(game about driving into zombies, main game mechanic upgradable car and in my view for the time part of the brief make sometime time related like arcade mode or running out of fuel.)* and design the game around these simple thoughts first and formost without changing. Then when game is well on course (which it wasn't) add a single idea here and there, big ideas that would affect the initial formula should be saved for the sequel etc (like bridge/zombies damaging car when you run into them, elemental zombies) Generally I felt our game is a mess and when playing it yesterday Im not trying to be petty.. but the question that was running through my head was "how is this fun" "am I having fun" and lastly "are other people having fun"? I feel strongly about this last point, whole purpose behind making games.