Minorproject Software ontwerpen en toepassen

Group 1

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Theme and Interpretation

We choose a combined theme: “Things you hate” and “An unconventional weapon”. The things we collectively hate are superfoods, especially quinoa. In the game you can choose if you want to be a super-food lover (vegan) or a fast-food lover (Mc-Donald’s Tycoon). The goal is to steal all the super-food or fast-food from your opponent. You are able to stop your opponent from stealing your own food by shooting at him. The super-food lover will shoot quinoa and other super-food. And the fast-food lover will shoot French fries and other fast-food. This in total makes the game a two person action shooter. This second person could be another real life person or a bot programmed by our team.

Game idea in about a 100 words

The game scene will be a street with on the one end a super-food shop (whole foods) and on the other side a fast-food shop (Mc-Donald’s). The street will be a neutral confrontation zone. Your goal in the game as a fast-food or super-food lover to steal the food form your opponent and bring it back to your base. Because you hate the other party and rather want him/her to liquidate and save the world. In the game you are able to shoot on your opponent to disable him for a certain amount of time. The winner of the game will be the player collected the most food from his opponents and brought back to his base with a limited amount of time.

The key components for each part of the computer science direction

Computer graphics

- 3D models ★★ *Iris & Mats*
  Everything will be modeled in 3D. So meshes for the characters, weapons and the environment will be made in Blender.
- 3D animation ★★ *Iris & Mats*
  The main characters from the games are human like and will have walking, idle and death animation. This can be done by making a skeleton to the Blender mesh.
- User interface ★★★★★ *Mats*
  Each of the following sub points will be included in the user interface and are awarded each one star. The textures will be made by Photoshop and the UI will be made in Unity.
  - Credits
  - Start/Pause/End screen
  - High scores
  - Options
  - UI animations

- Optimize meshes for games ★ *Iris & Mats*
  Meshes will be optimized for games by simplification of the amount of triangles. If the amount of triangles will be too great you will have a hard time rendering all the images. To fasten the render process we will use simplification on the 3D meshes.
- Particle system ★ *David*
  An easy add-on for the game is a particle system. When the character throws a personalized grenade an explosion will occur and a particle system is activated.
- Camera shaker ★ *David*
  When a person has been hit a red glow in the main camera will be shown and also the camera will be shaken. Just to make it a little more unpleasant to get hit.

Artificial intelligence

- Dumb AI ★ *Rick & Laurens*
  The dumb bot will not be really clever, it only tries to get the pickupables and will not concern with the other player.
- Smart AI ★★★ *Rick & Laurens*
  The smarter AI keeps track of the location of the opponent, if the bot has a clear shot it will for certain shoot at the player. Also because humans are not perfect the bot will miss his shot with a predefined probability.
- Overpowered AI ★★ *Rick & Laurens*
  The extreme bot is perfect, if he has a clear view on the human. It will make the shot and without missing it will always kill the opponent, if his gun is loaded and there are no obstacles on the way.
- Pathfinding ★★ *Rick & Laurens*
  for the bot the find the shortest path in the game field it will use an ant colony optimization used from the course Computational Intelligence.
- Consciousness ★★ *Rick & Laurens*
  to make the bot more human like, we will program common sense into its script. When an opponent is next to him, the computer will not bump into him but shoot or run away depending on the amount of health the bot has.

Web & Database

- Online profiles ★★★ *Rick*
  At the beginning of the game a game profile can be made and stored on a raspberry pi. So the data will be in one place.
- Online high scores ★★ *Rick*
  to keep track of all the high scores of the game again we will query in a script at the beginning of the game to ask for the high scores.
- Send data to gameanalytics.com ★ *Rick*
  During the gameplay of a player many data will be collected like, Kill/Death ratio, accuracy and scores. These data will be again stored on the raspberry pi in a database and these data will be sent to www.gameanalytics.com and from the analytical graphs a conclusion can be made.
- Share on social media ★★ *Rick*
  Also it will be possible to share the game and the score if you won against a human or a computer player on social media.

Programming

- Online multiplayer ★★★★★ *David & Laurens*
  This very difficult addition worth five stars will let two players compete against each other through a local LAN. One player will be the Server and the other player will be the client. Because a whole Server and Client system has to be made the point is worth quite some points. There is also a possibility to make the server on a cloud server, but due to costs we chose to make a local LAN connection.
- FPS independent ★★ *Rick & David & Laurens*
  The most annoying part we you play a game together is that some computers show less frames per second. The information from the playfield will be asynchronously available for a different player. To solve this in the update function we will use the characteristic from the Time object, Time.deltaTime.
- Killcam ★★ *Laurens*
  Locally on the computer each 5 seconds of images upfront the current frame will be stored, if a player has been killed. The 5 seconds of images from the killer will be sent to the killed person.
- Unity triggers ★ *Rick & David & Laurens*
  Unity Triggers are of great importance when you pick up pickupables from the opponent's side, when you collide with a bullet from your opponent or when you collect a power up from the neutral zone.
- Unity physics ★★ *Rick & David & Laurens*
  All the objects in the game scene will use of the physics system from Unity. This makes it really easy to make the game scene realistic in terms of physics.

Student names, e-mails and role assignment

Producer	
Laurens Weijs LaurensWeijs@hotmail.com	
Lead programmer	Lead artist
Rick Molenaar Rick_Molenaar96@live.nl	Iris Vendrik Iris_Vendrik_1@hotmail.com
Game designer	World builder
David Veselka Bugattid@gmail.com	Mats Mulder Mats.Mulder43@gmail.com

A rough schedule/timeline

For the Timetable for this minor project please have a look at Appendix A.

A link to the GitHub project page

https://github.com/matsmulder/MinorProject.git

Appendix A

Timetable Minor Project group 01

	week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8	week 9	week 10
	9-Nov -> 15-Nov	16-Nov -> 22-Nov	23-Nov -> 29-Nov	30-Nov -> 5-Dec	6-Dec -> 12-Dec	13-Dec -> 19-Dec	20-Dec -> 26-Dec	27-Dec -> 3-Jan	4-Jan -> 10-Jan	11-Jan -> 17-Jan
	Core Project Document 10-Nov									
	Making the core dynamics of the game David, Rick & Laurens									
David	**Core gameplay** lopen, schieten & acties	Health system, toggle weapons	Online Multiplayer							
Rick	Building basic world	Bots	Bots							
Laurens	assist gameplay	Bots	Bots							
	Making the 3D models and textures for the game Iris & Mats									
Iris	3D meshes Characters	3D meshes Weapons	3D animation							
Mats	3D meshes Characters	Start, pause and end screen.	Finishing UI							
			Prototyping Report 24-nov							
			Game Design Documents 27-nov							
				Extending the core dynamics of the game						
			David	Online Multiplayer	Camera Shaker, Particle system.	Finishing touch				
			Rick	Database	Database	&				
			Laurens	Database or Multiplayer	Killcam, implementing audio	Delay				
				Making the environment						
			Iris	3D environment	3D environment					
			Mats	Gathering Audio	3D environment					
						Early Access 18 December				
							(let the testers test the Early Access)			
							CHRISTMAS	**CHRISTMAS**		
									Interpret the results from the testers	
	Deliverables									
	Art Team								**Game analytics report 6 Januari**	
	Programming team									
										Fix all the minor bugs for the programming team and details for the art team
										Beta Release 15 Januari