

DM2199 Computer Graphics Project

Project name: SINGAPORE MOTORSHOW 2020

Team name: Singapore Polytechnic

Members

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- Overview
 - 3D OpenGL C++ programme
 - Futuristic
 - 2-week duration
 - Coded in Visual Studio
- Concept
 - A futuristic vehicle convention, in which the user(s) are able to interact with NPCs and test-drive the vehicles in a race.
- Mechanics
 - Particle System
 - Mini-game local Multiplayer
 - Driving
 - Camera
 - Score system
 - Character ghost
 - Car Health
- Interface
 - Graphics UI
 - Keyboard Controls (WASD/Arrow Keys)
 - Mouse Controls

- Feature List
 - Car
 - Car controls
 - Car physics
 - Human
 - Human animation
 - Human controls
 - NPCs with interactions
 - Distance Checking
 - NPC Animation
 - Interactions
 - Collision detection
 - Camera
 - FOCUS cam
 - FREE cam
 - Camera switch subject
 - Local multiplayer
 - Split-screen
 - Multiplayer controls
 - Changeable controls
 - E.g WASD to QWER.
 - Particle system
 - UI
 - Minimap
 - Menu
 - Inventory
 - On-screen controls
 - Mini-games
 - Gameplay
 - Score system
 - Scene Management
 - Light
 - Assets
 - Model Animations
 - Scene Changing
 - Sounds
 - Implementation
 - Background music
 - NPC audio
 - Health Bar for the car.
 - Collision Damage
 - Damage effect (extra)
 - Local Storage

- Controller and Keyboard Input
- Game UI controls
 - Arrow keys for movements.
 - F key to interact.
 - B key to switch cameras
 - C key to repos mouse cursor
- Task breakdown for each member and estimation for each feature
 1. Controls

a. Car movement controls	- YK - 5 hrs
b. Car camera controls	- YK - 5 hrs
c. Main Character controls	- GY - 5 hrs
d. Multiplayer controls	- L - 5 hrs
e. Changeable controls	- EH - 4 hrs
 2. Physics

a. Car physics	- YK - 5 hrs
b. Collisions	- YK - 16 hrs
 3. Animation

a. Main Character Animation	- GY - 2 hrs
b. NPC Animation	- L - 2 hrs
c. Model Animation	- YW - 2 hrs
 4. Audio

a. Implementation	-YW - 9 hrs
b. Background music	-YW - 2 hrs
c. NPC Audio	- L - 2 hrs
d. Car Audio	- YW - 2 hrs
 5. UI

a. Minimap	- L - 3 hrs
b. Menu	- L - 3 hrs
c. On-screen control	- EH - 4 hrs
d. Split-screen	- L - 10 hrs
e. Scale of UI	- GY - 5 hrs
f. Text input box	- GY - 2 hrs
 6. Scene Management

a. Light	- YW - 2 hrs
b. Assets	- YW - 20 hrs
c. Scene Manager	- GY - 5 hrs
d. Shader Manager	- GY - 5 hrs
 7. Camera

a. FOCUS cam	- GY - 3 hrs
b. FREE cam	- YK - 3 hrs
c. Switch between cameras	- GY - 3 hrs

8. Mechanics

- a. Local storage for Score Manager - GY - 8 hrs
- b. Doubly Linked List Score Manager - GY - 8 hrs
- c. Merge sort for Score Manager - GY - 8 hrs
- d. Classes for Particle System - GY - 3 hrs
- e. Object pooling for Particle System - GY - 5 hrs
- f. Billboarding for Particle System - GY - 5 hrs
- g. Character ghost - GY - 5 hrs
- h. Distance checking - L - 2 hrs
- i. NPC interactions - L - 5 hrs

9. Miscellaneous

- a. Collision Damage - EH - 5 hrs
- b. Damage effects - EH - 3 hrs
- c. Mouse input - GY - 2 hrs
- d. Console input - GY - 2 hrs
- e. Framework modifications - GY - 5 hrs
- f. Encryption for Score System - GY - 3 hrs

○ Project schedule

- 1. Mon - Fri, 9am - 6pm

○ Unique selling point

- 1. Particle System
- 2. Local Split-screen Multiplayer
- 3. SAT Collision