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BONAFIDE CERTIFICATE

This is to certify that this record of course work is a bonafide work done by

Ajil Padathuparambil Pappachan, ID No.: **2018UG03077**, in partial

fulfillment of requirements for the **1st year B.Sc. Game Programming**

during the academic year 2018 – 2019 and is the original work of the

candidate.

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Verified By   **Staff In-Charge**

Research Document For Specialist Practice - I

2D Game

2D video games refer to action happening on a 2D plane and typically are either side-scrolling or vertically-scrolling. What's more, the characters and environments are usually rendered in 2D. 2D computer graphics is the computer-based generation of digital images—mostly from two-dimensional models (such as 2D geometric models, text, and digital images) and by techniques specific to them.

2D graphics models may combine geometric models (also called vector graphics), digital images (also called raster graphics), text to be typeset (defined by content, font style and size, color, position, and orientation), mathematical functions and equations, and more. These components can be modified and manipulated by two-dimensional geometric transformations such as translation, rotation, scaling. In object-oriented graphics, the image is described indirectly by an object endowed with a self-rendering method—a procedure which assigns colors to the image pixels by an arbitrary algorithm. Complex models can be built by combining simpler objects, in the paradigms of object-oriented programming.

Game Engines like Unity, Unreal Engine, eg. work on this principle.

Game Elements

Action - Every Interaction that the player(s) can perform in a game is called the game actions.

Rules - Every game is built upon a predetermined set of rules.

Rewards - The player must be provided with some kind of reward system to keep him/her immersed.

Objectives - Objectives are tasks the player must perform to make progress in the game.

Assets - Assets are the building blocks of a video game. Every single element used in the design of a game is an asset.

Competition - A game must provide some kind of competition for the player, whether with himself/herself or with other people.

Challenges - Challenges are the difficulties a player faces while trying to complete the objectives.

Target Audience - A particular group of people at which the game is aimed at is the target audience of that game.

Game Engines

A game engine is a framework for game development that supports and brings together several core areas. Game developers can import art and assets, 2D and 3D, from other software, such as Maya or 3s Max or Photoshop; assemble those assets into scenes and environments; add lighting, audio, special effects, physics and animation, interactivity, and gameplay logic; and edit, debug and optimize the content for their target platforms.

Examples for such game engines are Unity, Unreal Engine, Game Maker, Cry Engine, etc.

Game Genres

The Design of the environment, gameplay, and design are hugely influenced by the genre of the game.

- Action Game
  - Survival Game
  - Shooter Game
  - Platformer Game
- Adventure Game
- Role Playing Game
- Simulation Game
- Strategy Game
- Sports Game
- Scientific & Educational Game

Famous 2D Games

Although there is no official Top 10 2D Games of all time, due to the differences in tastes and preferences of gamers around the world, the following games are still on top of most players' favorites list :

- Castlevania 3
- Contra
- Bionic Commando Rearmed
- Super Turrican
- Cave Story
- Gunstar Heroes
- Kirby (NES)
- Mega Man 2
- Castlevania: Symphony Of The Night
- Super Metroid
- Another World
- Aladdin
- Battletoads
- Ghosts 'n Goblins
- Maximo
- Ratchet and Clank
- Crash Bandicoot
- Alex Kidd in Miracle world
- Earthworm Jim
- Jak and Daxter
- Sonic The Hedgehog series
- Mario series

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