

Course Project Documentation

CS101 Project

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1. Introduction:

The purpose of this document is to provide an overview of the game *Jetman*, a strategy game, which is interesting for the user to play. The main purpose is that we wanted to choose a project wherein we get to use maximum number of concepts of `c++` like arrays, pointers, functions and so on. We have also used this as an opportunity to learn graphics.

The game uses a simple, one-click system to control the Jetman, when the player clicks anywhere on the screen, the jetpack fires and Jetman rises.

When the player lets go, the jetpack turns off, and Jetman falls. Because he is continually in motion, the player does not control his speed, simply his movement along the vertical axis.

The objective of the game is to travel as far as possible, collect coins, and avoid hazards such as line barriers, missiles.

This document is intended for- gamers who wish to learn more about how the game works, people who wish to contribute to the game by testing it for bugs or not very well developed

characteristics, and for TAs and Professors who will be grading this project.

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2. Problem Statement:

The aim of this project is to build a game named Jetman in which:

He has to overcome obstacles .The obstacles can be:

Spikes on top and bottom of screen.

Rectangles of random origin.

Score increments on passing each obstacle.

Jetman goes up when we press space-bar and goes down by pressing character b.

3. Requirements:

The requirements for this project is purely of software no extra hardware is required except a computer to build and run the code. The software requirements are as follows:

Code::Blocks – Novice Version : For building and running the code and foreditting it .

4.Implementation:

A. Functionality:

- a.) **Movementofjetman:** The movement of jetman is controlled by the user through the keyboard using getch function. As and when the user presses spacebar the jetman goes up and when the user presses character b jetman goes down to avoid the obstacles.
- b.) **Movement of obstacles:** The obstacles that is the coulored rectangles are fo random origin and given a variable speed which increases as it comes forward , for that we used a simple function i.e. repeat function in simplecpp.

5. Testing strategy and data:

The main thing that is to be tested in this game is collision of jetman with the rectangular barriers and spikes present at top and bottom of the screen.

The data collected is the x and y coordinates of the rectangular barrier and the spikes.

The x co-ordinate of the jetman is fixed. The y co-ordinate of the rectangular barrier can vary from 100-400. So we tested the program by matching the x and y co-ordinate appropriately such that when a collision is there the game is over. The same thing is followed with the spikes.

The synchronized movement of the jetman is also tested in the game. When the user gives input using the keyboard all the parts of the jetman move simultaneously in a synchronized manner so as to give an effect of jetman made up of a single entity.

6. Discussion of System:

A) What we worked as per plan

1. WEEK 1:

In the first week of the project, all the team members in our team discussed the strategy of preparing the project and decided the main theme of the project we had to prepare.

We first decided to plan our project week by week and execute it accordingly. Also we had to devote some of our time of the first week to prepare the SRS of the project.

2. WEEK 2:

We started with our project in the second week and decided to build our project using Simplecpp.

In the second week we had to search and learn the new function that we would need in our project such as working and execution of random function, using functions for movement of hurdles and Jetman.

In the second week we assumed Jetman to be circular for simplicity. Hence we used our second week for the construction of various functions and movement of hurdles and Jetman.

3. WEEK 3:

In the third week we had to work towards the making of prototype of our project and movement of Jetman and obstacles independently.

We also used our third week to design our final Jetman which was composed of various shapes such as rectangles, circles, lines etc... and to look towards the movement of all the parts of the Jetman simultaneously.

In the third week, we also changed all the one liner codes in our program and made our program composed of various functions so that it looks more effective and helps the program build faster.

4. WEEK 4:

In the fourth week of our project we had to look towards the presentation of our project. The fourth week lead towards the final decoration of our project.

In this week we developed the interface of our project and made arrangements to start the game and the instructions of the game.

We also developed the spikes of the game during the fourth week of our project.

The equations of collision of Jetman with the random obstacles and the spikes were also written and implemented during this week.

Moreover the various types of functions and logic required for the enhancement of the score and display of the score was also made during this week. We also had to look towards the game over part of the project during this week.

B) Changes that we had to make in our project:

Initially we had decided to introduce laser beams and missiles in our project by introducing various levels. But we lost major time of our project in making the movement of Jetman and obstacles independent and we were left with no time to introduce various levels in our project.

The independent movement of Jetman and obstacles led to the main drawback of our project.

7 .) Future Work :

- A) In our project we first started just by SIMPLECPP graphics i.e. making use of rectangle , circles and lines to depict the picture of Jetman . also we used SIMPLECPP graphics for creating spikes and obstacles. In future we can use any other Programming Language or some Creative library to make the Graphics of our Game more appealing and User friendly .
- B) Also due to lack of options , In SIMPLECPP we created our game in just one normal mode . In future we can make two or three modes such as normal mode , classic mode , Arcade mode etc . to make our game more challenging and interesting. A level Progressing game can also be made to ensure that the player actively participates throughout the game .
- C) As C++ is based on sequential execution of code , We were unable to show independent movements of various objects in our game , In future we can add more stuff like coins and missiles (whose motion would be independent of each other).to make our game more interesting.

8.) Conclusions :

We tried to build a game like Jetman which would dodge obstacles by going up and down also he has to take care of spikes which were placed at top and bottom of the screen . He would gain some points after passing each successful hurdle also He would collect coins which would help him to boost his speed or enhance his power .

9.) References :

- A) Introduction to Programming through C++ by Prof. AbhiramRanade . Chapter
- B) Lecture Notes By Prof. KaviArya
- C) Slides and PPTs by prof. D.B. Phatak
- D) <http://www.it.iitb.ac.in/frg/wiki/images/e/e8/CodeBlockManual.pdf>
- E) <https://www.youtube.com/watch?v=Jzxi8nid9BQ>
- F) <https://youtu.be/J89QDpjO-gl>