## Modified file

Software Requirements Specification

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BASKET THE BALL

Group Project

Batch 321

Under the guidance of our TA *Japnik Singh*

Group Members

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## Introduction

This Software Requirements Specification provides a brief description of the functions and specifications of our CS 101 group project. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.

The basic aim behind the game is to help the user improve the sense associated with motion of projectile, and the physics associated with it.

## Problem Definition

Basket The Ball is an interactive computer game, in which the goal of the player is to throw the ball into the basket and score points. The difficulty increases with every level as the size of the basket decreases and it requires more precision to score points.

## Description of Input and Output

The game starts with a Welcome Screen.

Next, the user can choose between the following options on the Home Screen:

1. Play a new game
2. Instructions
3. Highest Score
4. Exit

*New Game:*

Once the user is into a game, the screen shows a catapult with a ball and a basket at some distance. The user is expected to click at the position from where he wants to launch the ball and confirm by clicking the throw button. The ball will follow a projectile motion along its trajectory. If the ball gets into the basket, the user gets an increment in points.

Every level provides three chances to the user. If he is able to score points in any of the three chances, then he is eligible for the next level. But if he is unable to do so, then the game ends and final score is shown.

*Scoring:*

For every successful chance the user gets an increment as follows:

Level 1: 10 Points

Level 2: 20 Points

Level 3: 30 Points

A text file is used to store the highest score. After the end of every game, we check if the score is more than the highest score. The score is displayed and new highest score is stored in the text file.

*Instructions:*

The ‘instructions’ window gives information about playing the game.

*Exit:*

This option is to close the game

## Function Specifications

Details of functions, classes, standard libraries and global variables are given below.

*Functions Used:*

* ‘Projectile’ function for finding out the velocity of the ball in x and y direction corresponding to user’s input
* ‘Rangescale’ function to give the range of projectile motion
* ‘Maxheight’ function to give maximum height of the projectile motion
* A ‘bounce’ function to check various cases of ball’s collisions and subsequent motion
* ‘Highscore’ function for comparing score with the highest score
* ‘Playgame’ function for levels and chances

*Classes Used:*

* A class to describe position, size, shape of basket

*Standard Libraries And Header Files Used:*

* <iostream>
* ezwin.h
* <cassert>
* <cmath>
* rect.h
* circle.h
* bitmap.h
* stdio.h
* stdlib.h

*Important Global Variables:*

* xcur,ycur : Coordinates of the top left corner of ball’s image at given instant
* tana : Tangent of angle of projection
* time1 : Current time during projectile motion
* extn : Extension of catapult’s thread

***Status of Completion***

The mouse click function is working only if it is called in ApiMain. In case it is called in some other function, it doesn’t work.

This was creating problems in execution of the program.

So we have made a separate file called ‘finalproject2’, which allows the user to directly play the game, i.e. without any home screen and other options.

All other functions are intact in the main program i.e in ‘finalproject’ but we are unable to execute them because of the mouse click error.

***Ideas for Future Work***

In order to make the game more interesting, we had planned to include the following features in our program. However, at the moment, we leave these for future improvement.

1. As difficulty level increases, the basket also starts moving.
2. Special bullet balls whose velocity can be fixed to a constant value at one point of their motion
3. Special triplet balls which can be divided into three parts at one point during their motion.
4. An option to save existing game.
5. Improved graphics.
6. An option to play desired audio at the background.

## User Interface Requirements

We are using EzWindows to display the game in linux environment

***Individual Contribution***

The project work was divided into two groups.

*Group 1*

Members: Ayush Kumar, Ashwini Jain, Asmita Singh, Ashwini Kumar Janu

Work: To take the input from user, and process it to show the projectile motion

*Group 2*

Members: Ayush Gupta, Astha Agarwal, Avinash Damor

Work: To find various cases of projectile’s collision with the basket or floor and take care of chances and score

*Individual Details:*

*Ashwini Jain:* Active member in discussions, Helped in writing and debugging programs

*Ashwini Kumar Janu:* Though wasn’t an active member, but helped in debugging

*Asmita Singh:* Gave ideas regarding design of the program, Tried to solve the problem of mouse click in Group 1

*Astha Agarwal:* Ideas regarding input, Wrote SRS, Group Documentation, Wrote main loop and other small programs of Group 2

*Avinash Damor:* Helped with general ideas, Did most of the debugging of Group 2, Made Home Screen

*Ayush Gupta:* Coordinated group activities, Wrote main program of Group 2

*Ayush Kumar:* Did most of the programming of Group 1, Helped with other ideas