# SOFTWARE PROJECT REPORT

# CS101

# AIR HOCKEY

# TEAM :112


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# Contents

# 1. Project Overview

Development of the single player Air Hockey game using SFML graphics library consisting of good quality graphics that one can play against the computer using a mouse/trackpad.

Air hockey is a game for two competing players trying to score points in the opposing player's goal using a table having a special low-friction playing surface.

Here we came up with software version of this game . We tried to build good interface along with good algoritm for computers move.

# 2. The Purpose  of the Project

## 2.1 Background of the Project Effort

To create a simple and addictive game for Game loving people that requires minimum requirement needs and provide maximum satisfaction

## 2.2 Goals of the Project

1. Develop a simple, market ready game
2. It should be fast and beautiful
3. Fluid and engaging graphics to enhance visual appeal
4. To develop a good collision equation that follows
5. To be develop a good Artificial Intelligence that is hard to beat but equally beatable
6. To include sound within the game during collisions and goal scoring

# 3. Requirements

## 3.1 Software Requirements

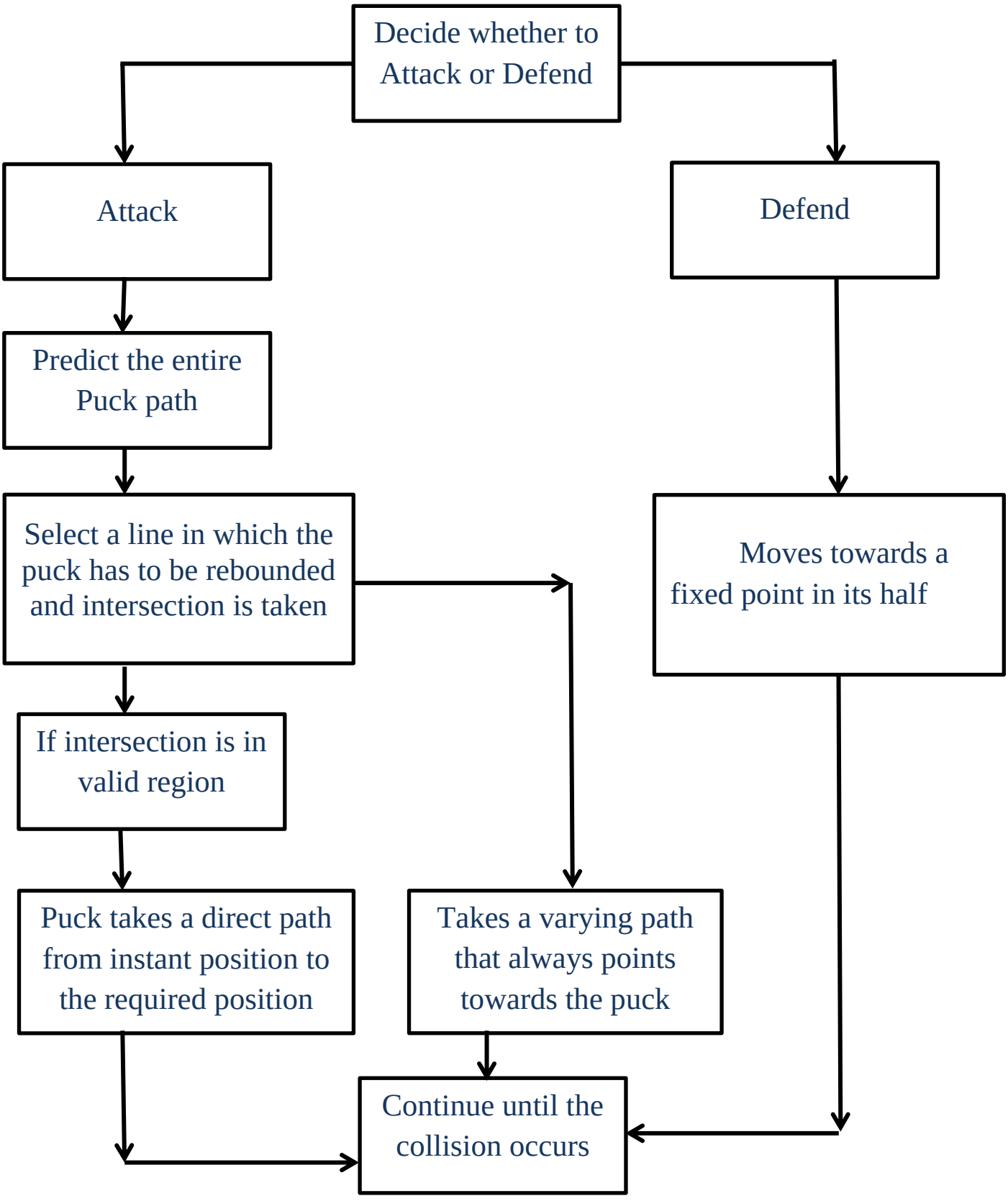
- GNU GCC Compiler- For compilimg the C++ game code
- SFML 2.0- To include fluid and engaging graphics within the game

## 3.2 Hardware Requirements

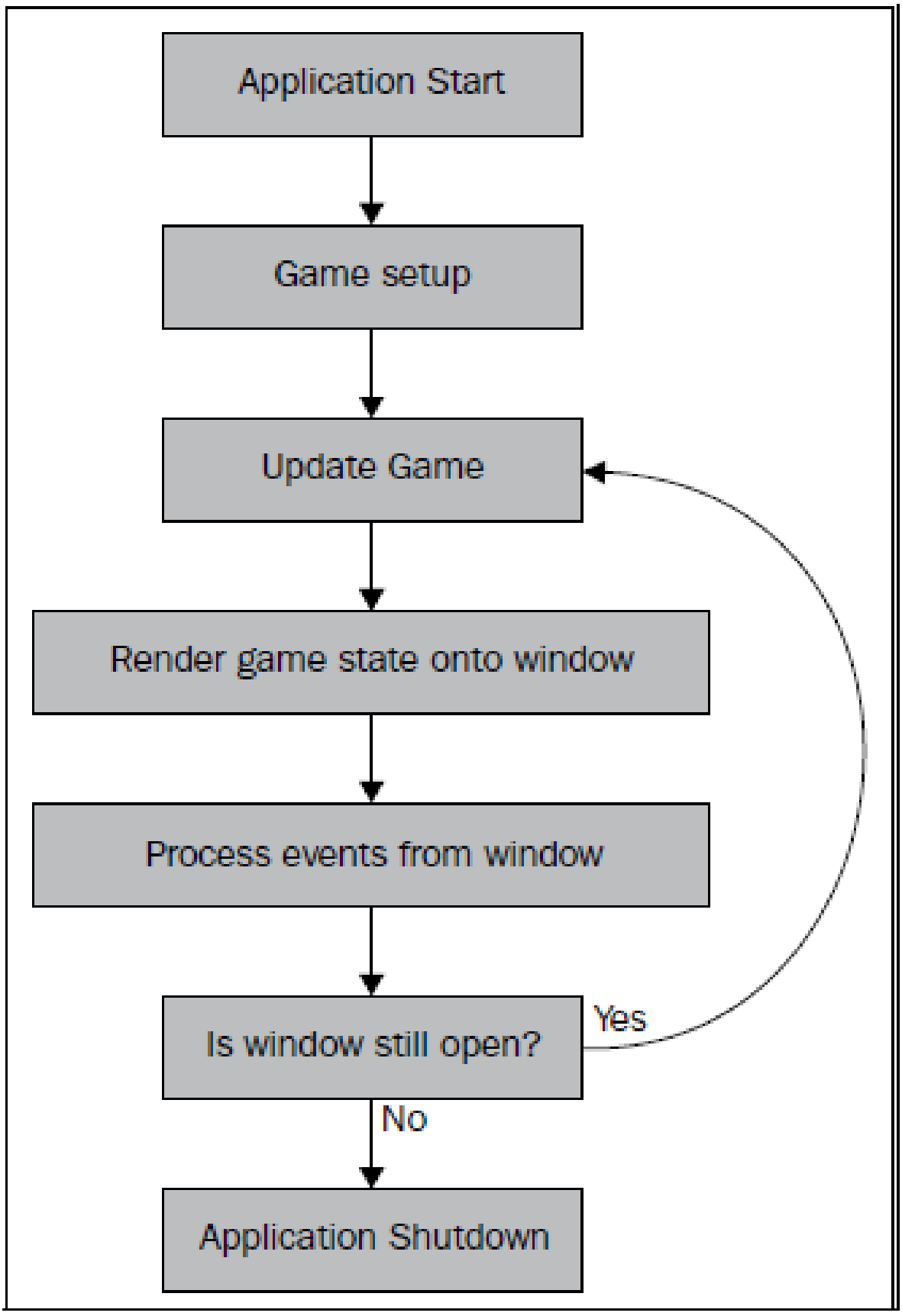
- Mouse/Trackpad
- Laptop/Pc

# 4. IMPLEMENTATION

## 4.1 AI Implementation/computer's move



## 4.2 Game Implementation



# 5. DISCUSSION OF THE GAME

## *5.1 A) What are worked as per plan?*

1. **PROPER COLLISION FUNCTION**

   Initially we faced some difficulty in writing code for proper collision .We used simple physics laws for the same. We neglected any kind of friction and considered free and elastic collision all over the game .

2. **GOOD AI/COMPUTER'S MOVE**

Proper AI was necessary so that any player can have fare opportunity to win the game and to lose the game. Our algorithm for AI (computer's move) is such that it is difficult to beat but is equally defeatable.

3. **GOOD INTERFACE**

   Successfully able to build good interface for the game. For this we have used SFML library .

4. **SCORING AND VECTOR FUNCTIONS**

We successfully added scoring function which shows scors of each player. Any player who achieves 7 score first wins the game.

## *5.2 B) What we added more than discussed in SRS?*

1. **PROPER SOUND**

In order to make game more interesting and more user appealing we successfullt added sound through out the game . We used three different types of sound depending upon where the puck hits.

2. **GRAPHICS**

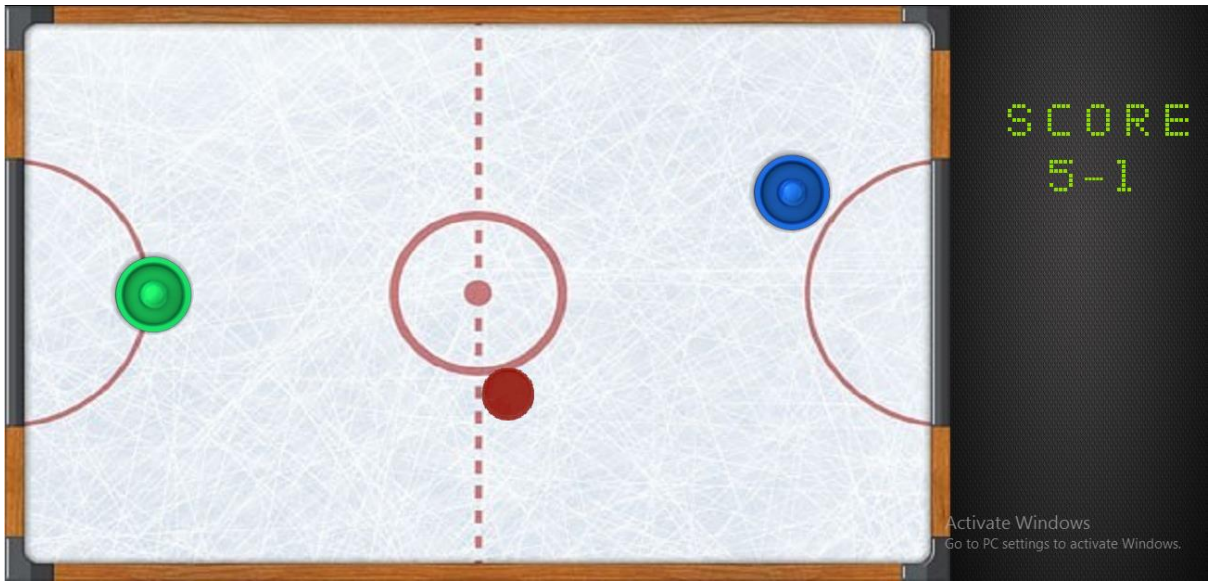
Graphics and interface was way better than we expected.

## *5.3 C) Change made in plan*

1. **USED SFML**

We used SFML library instead of using Opengl as mentioned in SRS. We firstly used OpenGl but soon realized that SFML is better to develop interface and graphics for our game and easy to learn.

# Game Screenshot




# Interface Screenshot

# 6. Testing Strategies and Data

1. One has to check if all the collisions occur as one expect it by everyday observation by hitting puck with mallet in all possible direction
2. Basic physics rules governing collisions should be followed each and every time
3. Graphics can be checked by testing conditions at high speed of puck
4. Difficulty level can be checked by observing tendencies of Computer mallet whether to play defensive mode or attacking and if it can play at high speed.
5. Audio included can be test simplying by checking different collision condition

# 7. Future Enhancement

1. May be developed to play online matches
2. Concept of air hockey can be developed to convert it into multiplayer football game
3. Using of boosters during the game such as powerbooster to give an extremely powerful shots
4. Inclusion of tournament modes with increasingly level of difficulty
5. User controlling of colours of mallets and puck

## 8. References


1. **SFML Game Development**
2. **Introduction to Game Development through Box 2D**
3. **YouTube channel Coding Made Easy https://www.youtube.com/watch?v=kAbkFY6lwAY&list=PLHJE4y54mpC5j_x90UkuoMZOdmmL9-_rg**
4. **An Introduction To Programming Through C++ - Abhiram Ranade**
5. **Gamasutra Lessons http://www.gamasutra.com/view/feature/131424/pool_hall_lessons_fast_accurate_.php**