

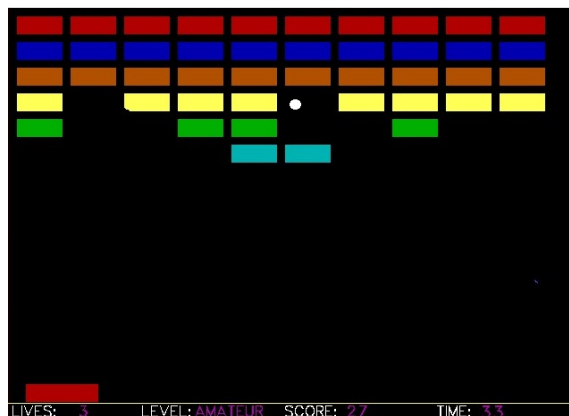
LITTLE ROCK INDIAN SCHOOL
BRAHMAVAR - 576213



PROJECT REPORT

CLASS XI and XII
COMPUTER SCIENCE
2016 to 2018

BRICK OUT



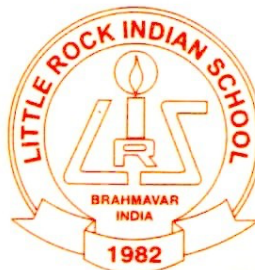
Name: Ashwin S H

Date: 2/2/2018

Reg. No.: 4634682

Little Rock Indian School

Brahmavar - 576213



CERTIFICATE

Class XII
Computer Science Project
2016 - 2018

This is to certify that Ashwin S H has successfully completed his Minor project "Brick Out" in Computer Science under my supervision at Little Rock Indian School, Brahmaravar during the year 2016 -2018.

Project In-charge: Mrs. Sona Maria
Fernandes

*Submitted to the AISSCE Practical Examination
held on 2/2/2018 at LRIS, Brahmaravar.*

Reg. No.:
1. _____

Examiners:

Name:
2. _____

Acknowledgement

There are so many to be thanked for their valuable guidance and support in completion of this project.

First and foremost, I'd like to thank our Director Prof. Mathew C. Ninan, our Principal Dr. John Thomas and our Vice-Principal Mrs. Lali A. Mathew for giving me an opportunity to be a student at this school and to carry out my project as well.

Among the persons who motivated me throughout the project work include my Computer Science teacher Mrs. Sona Maria Fernandes for all the help and support she gave me in the completion of my project "Brick Out".

I also thank my project partner Mr. Shamanth R Nayak K without whose help this project would not have been completed.

Not to forget the computer lab faculty Mr. Nitish Hebbar who was really supportive and fixed all technical problems. A sincere thanks to him too.

I also take this opportunity to thank my parents for their constant support during the course of this project work.

Ashwin S H

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Aim

The aim of our project is to create a user-friendly game using graphics in C++ Programming language to enhance our coding skills and creativity using Turbo C++ compiler.

Introduction

C++ supports a good graphical user interface called BGI (Borland Graphical Interface). Without this, our game was not at all possible and it would have been uninteresting. BGI is a primitive but easy to use graphics library. In our project "Brick Out", the main objective is to destroy all the bricks in the screen with the help of the ball given in the least possible time to score the maximum points.

Our game is totally based on the usage of graphics for implementing majority part of the visible stuffs. But in the background, we also used files to store the high scores of the users and also their corresponding usernames. Apart from it we have used classes and objects to make login and signup more effective. Because of all these, we could implement better game building strategy.

Basic Principles and Working

We have named our game as '**Brick Out**'. This is a single player game which is created using the C++ compiler. The fundamental ideas are taken from the latest online version of the game Atari Breakout developed by Atari Arcade games. This game is a whole lot of entertainment and a good source of effective time pass for all kinds of people. This game also enhances the hand-eye coordination of the players.

When the game begins, the top half of the screen is covered by 6 rows of bricks. Each row of bricks is of a distinct colour. The colours of the bricks starting from the bottom to the top are Cyan, Blue, Green, Yellow, Brown, and Red.

Using a ball, the player must destroy all the bricks in the screen in the least possible time. The ball is allowed to bounce on the top and the side walls of the screen. If the ball hits the bottom wall of the screen, then the player loses one of his three given lives. There will be a movable paddle in the bottom of the screen which can be controlled with the mouse. This paddle can be used as a platform to land the ball and bounce it back again thus preventing it from striking the bottom of the screen.

The movement of the ball in the game is based on the principle of laws of reflection of light (i.e., the angle at which the ball strikes the brick is equal to the angle with which it bounces back from the brick) and the principle of equation of straight lines.

Basic Rules of the game

- ⌘ The colour of the brick which is destroyed decides the points that the player gets.
Red-6 points, Brown-5 points, Yellow-4points, Green-3points, Blue-2 points, Cyan-1 point.
- ⌘ Initially, the player is given 3 lives, and he/she loses one life each time the ball strikes the bottom of the screen.
- ⌘ So, in order to keep the ball in action, the player will be provided with a movable paddle at the bottom of the screen. He/she can move the paddle only horizontally. Vertical or diagonal movement of the paddle is not allowed.
- ⌘ The scores will be displayed on the top of the screen.
- ⌘ There will be a specific time limit, say 5 minutes. If a player finishes the game before the specified limit, then the remaining time (in seconds) will be added up to the total points secured by the player. If one is unable to complete it within the given time, then the extra time (in seconds) that one takes will be subtracted from the total points.
- ⌘ There will be two levels in the game: Amateur and Pro. In the Amateur level, there will be a single ball moving and a specified length of the paddle. In the Pro level, the bricks get partially destroyed if the ball is bounced on them once. To completely destroy the brick, the ball must be made to bounce on them again. The game will be completed if all the bricks are destroyed by the player. If his/her score is a high score, then it will be registered in the 'Hall of Fame'.
- ⌘ In order to help the user, we have added a special feature called as the 'Quicksilver'. At some random point in the game, a mysterious colourful circle appears on the screen. If by chance, the ball happens to touch it, then for a short period of time, the bricks get completely destroyed for a single touch and the ball gets deflected only if it hits the side walls of the screen.

- ⌘ If the player loses all his lives, then the game will be terminated. And if his score is a high score, that too will be entered in the 'Hall of Fame'.
- ⌘ However, at any moment the player can end the game.

Algorithm

Step 1: Initialize the graphics

Step 2: Display the name of the game and ask the user to either login or signup

```
Step 3: if (login button is clicked)
{
    Ask for username and password. If it
    matches with any of the stored records,
    grant access, else ask to retry or signup.
}
```

```
Step 4: if (signup button is clicked)
{
    Ask for username and password and store
    them in a file. Grant access.
}
```

```
Step 5: Display the inner menu
1.Play
2.Hall of Fame
3.Instructions
4.Exit
```

```
Step 6: if (option 'play' is selected)
{
    Ask the user to choose from any of
    the 2 levels and begin the game.
}
```

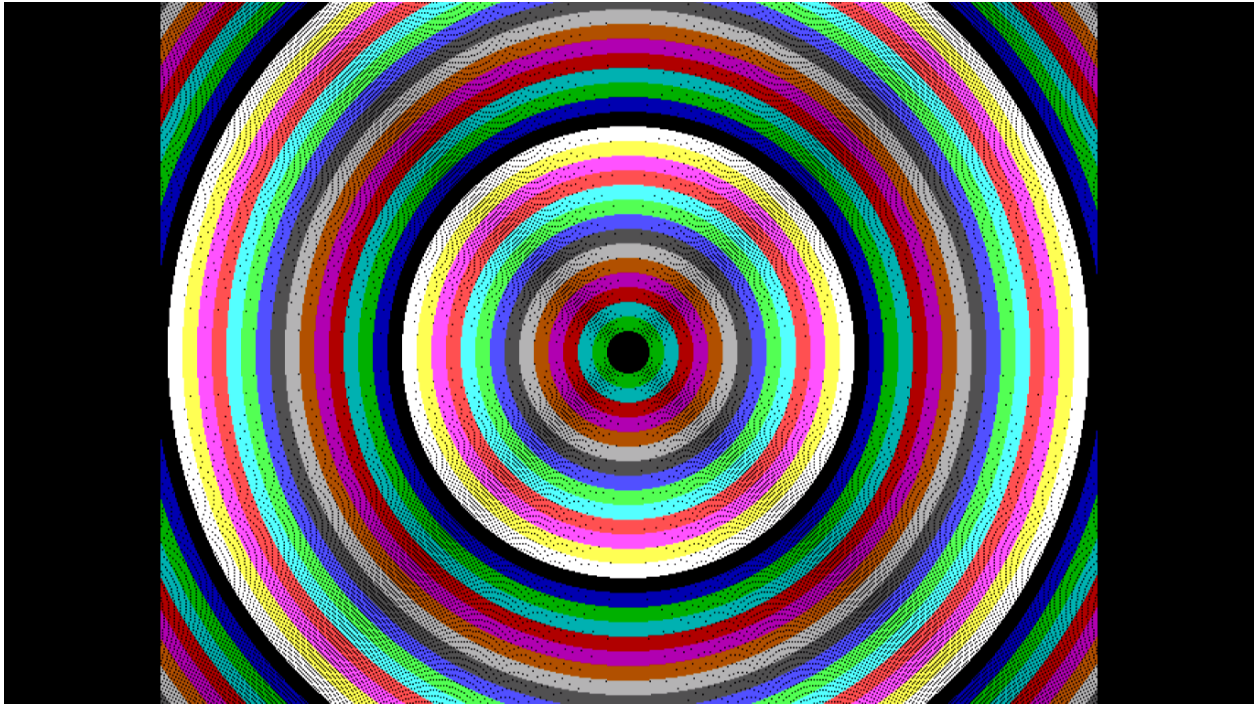
```
Step 7: if (option 'hall of fame' is selected)
{
    Ask the user to choose the level and
    hence display its high scores.
}
```

```
Step 8: if (option 'instructions' is selected)
{
    Display the basic instructions and the
    rules of the game.
}
```

```
Step 9: if (option 'exit' is selected)
{
    Exit the game safely.
}
```

Project Screenshots

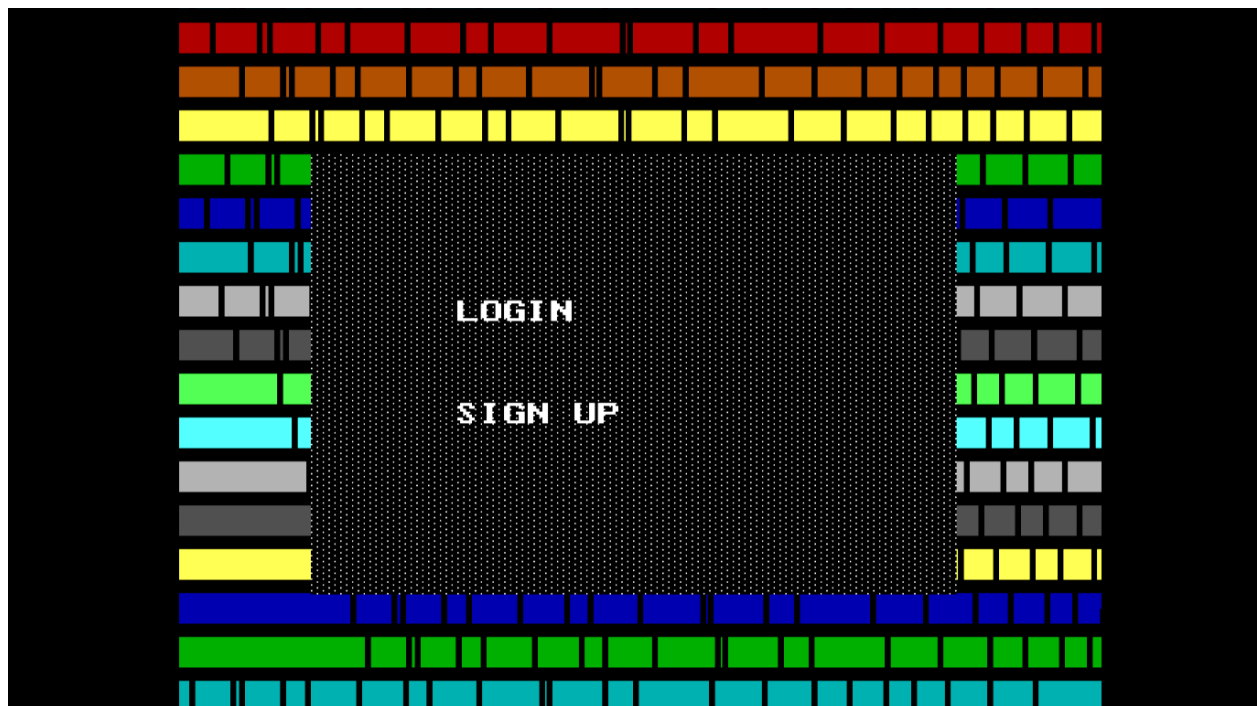
Loading Screen



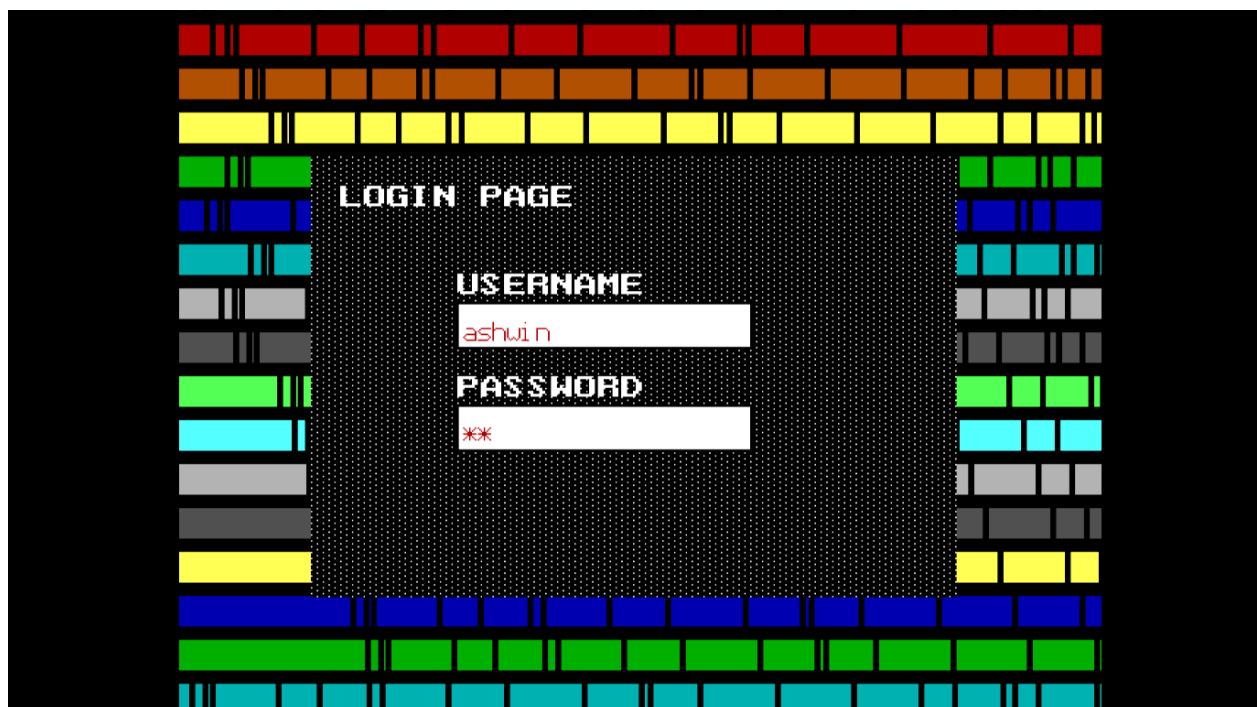
Welcome page



Login/SignUp option page



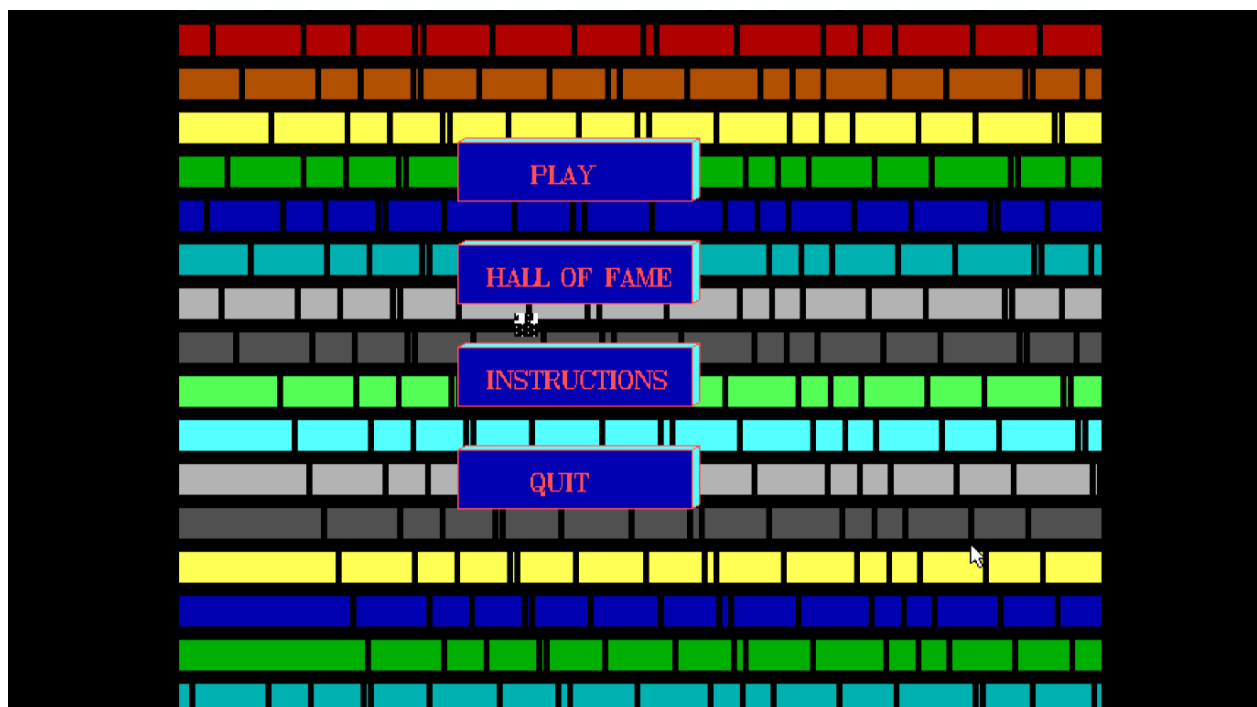
Login Page



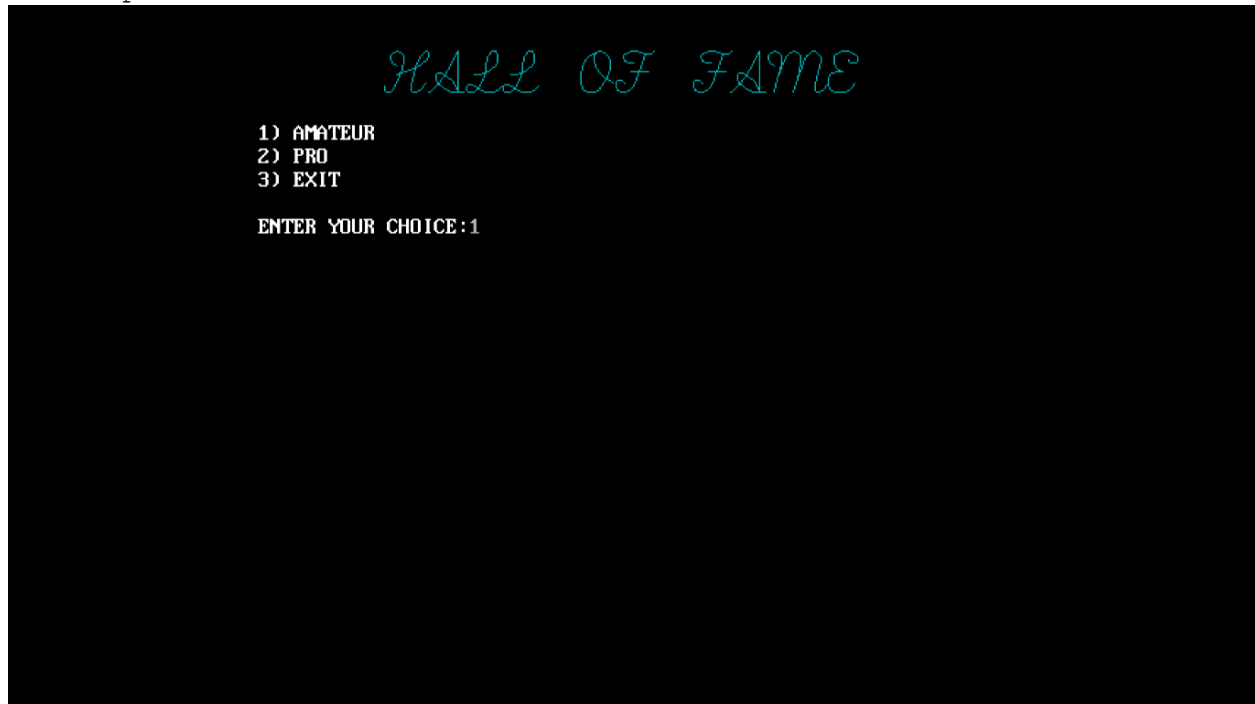
A grand welcoming...



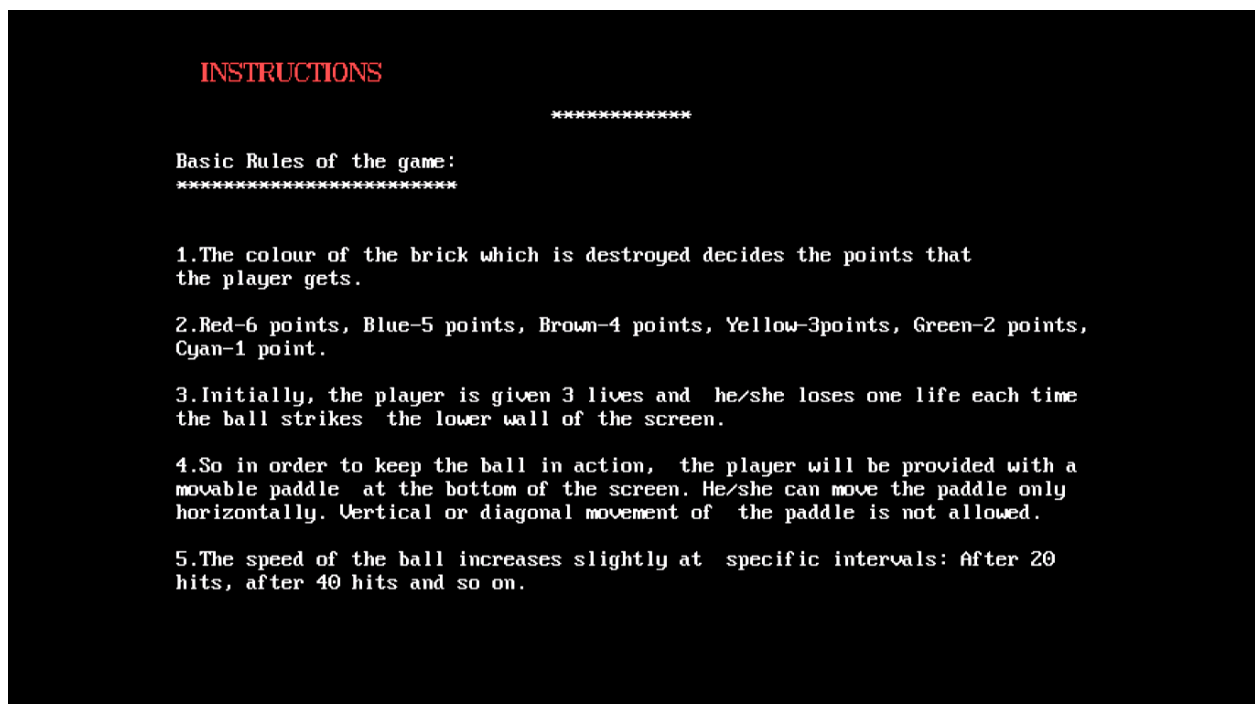
Main options page



Option 2: Hall of Fame



Option 3: Instructions (Instruction Page 1)



6. When a new ball is given to the player, it will start moving with the same speed as it was moving when the game initially started. Again after 20 hits its speed increases. After 40 hits it further increases.

7. The scores will be kept track of and it will be displayed on the top of the screen.

8. There will be a specific time limit, say of 5 minutes. If a player finishes the game before the specified limit, then the remaining time (in seconds) will be added up to the total points secured by the player. If one is unable to complete it within the given time, then the extra time (in seconds) that one takes will be subtracted from the total points.

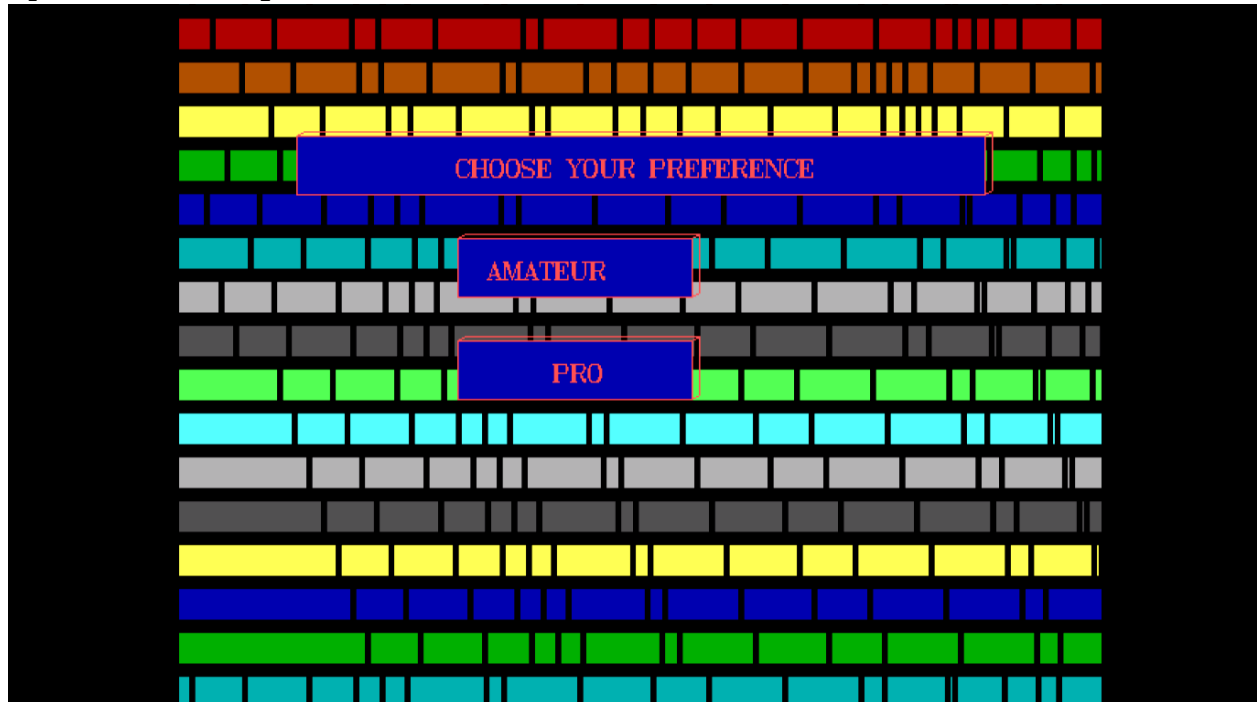
9. There will be two levels in the game: Amateur and Pro.

In the Amateur level, there will be a single ball moving and a specified length of the paddle.

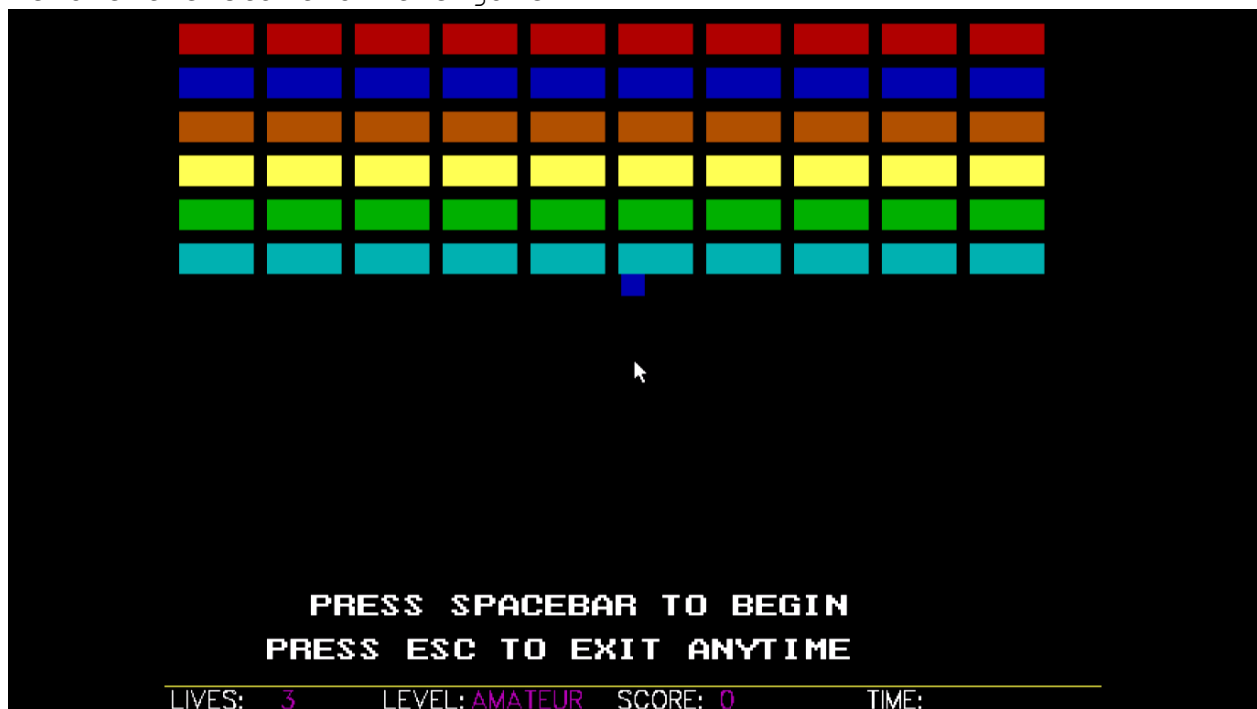
In the Pro level, the bricks will be half destroyed when the ball bounces on them once. To completely destroy the brick, the ball must be made to bounce on them once again.

10. The game will be completed if all the bricks are destroyed by the player. If his/her score is a high score, then it will be registered into the Hall of Fame. If the player loses all his lives, then the game will be terminated. And if his score is a high score, that too will be entered into the Hall of Fame. However, at any moment the player can end the game.

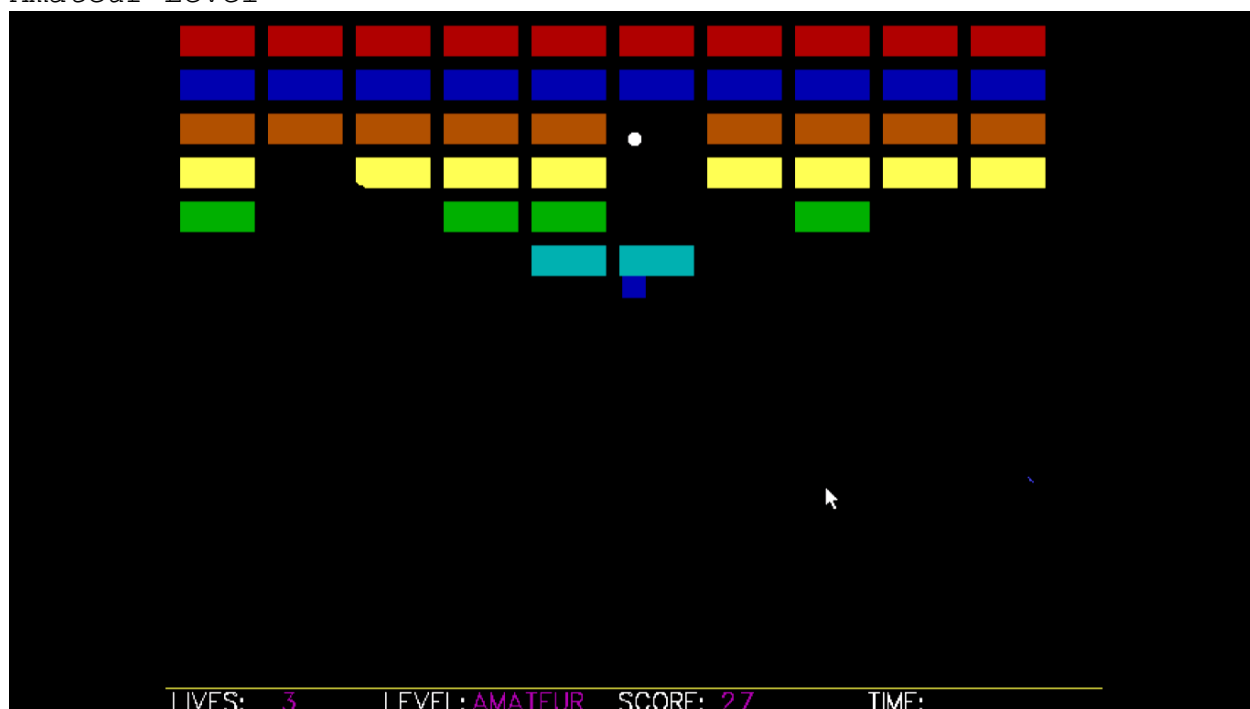
Option 1: Play



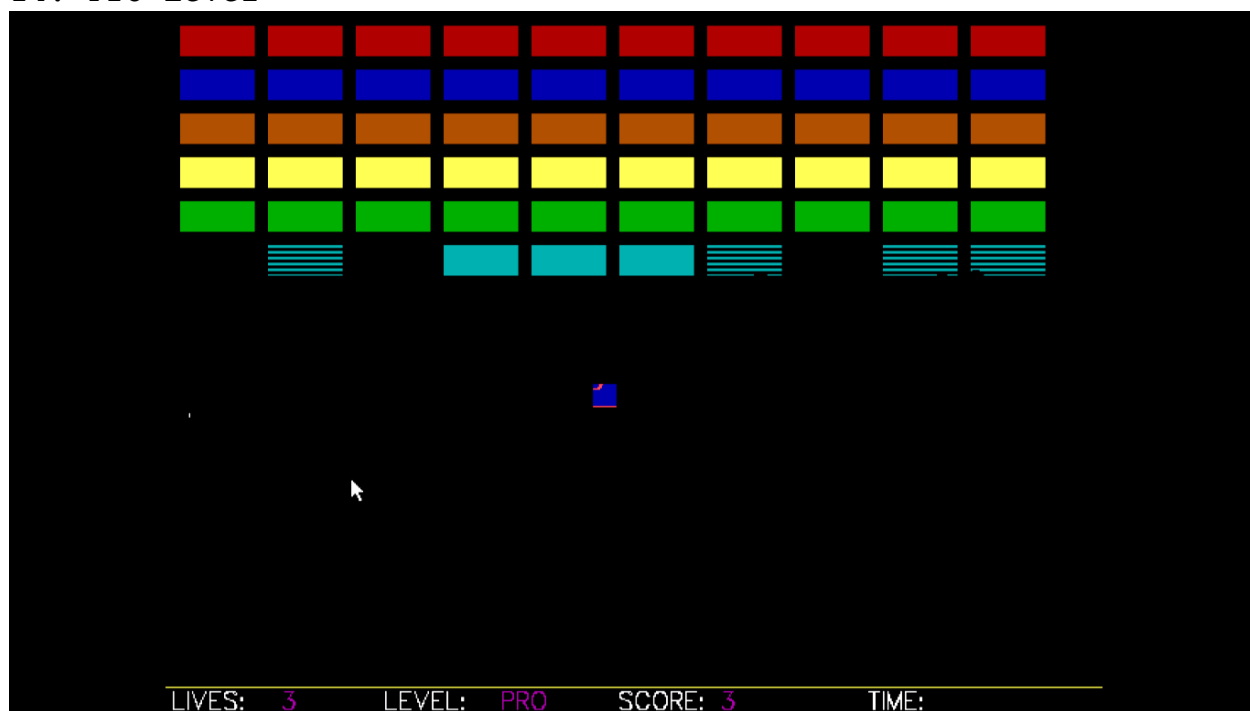
Before the start of the game



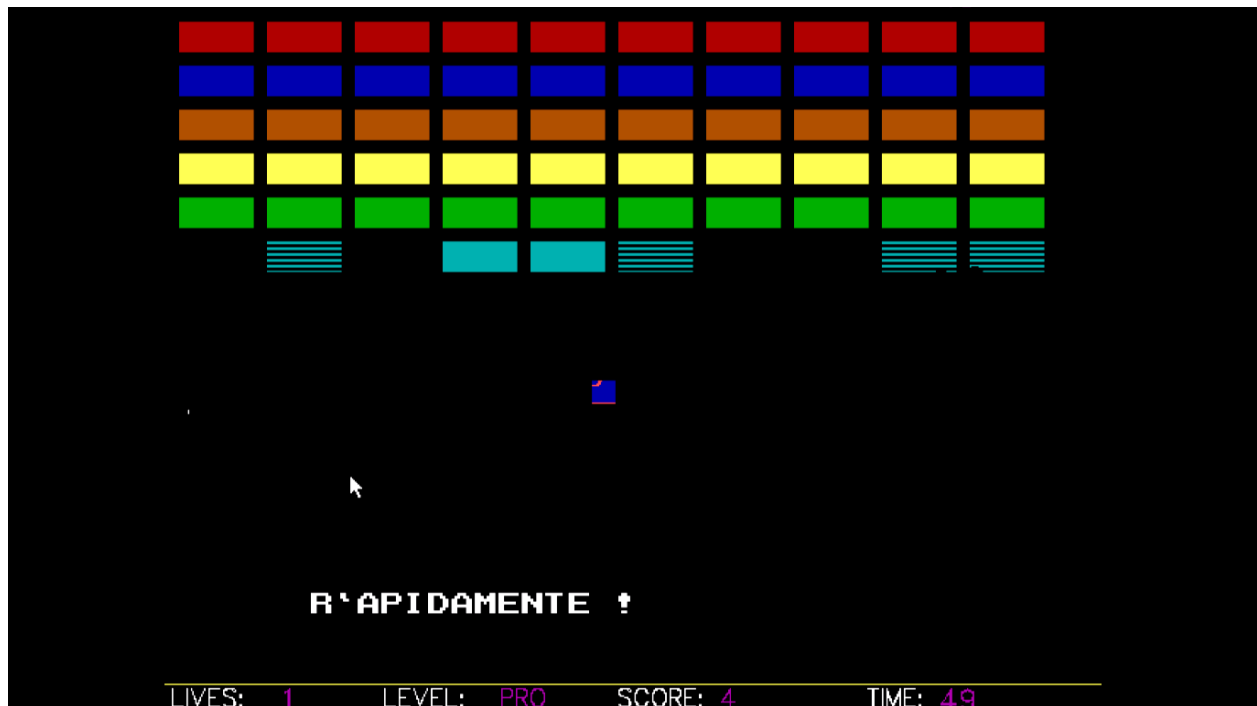
Amateur Level



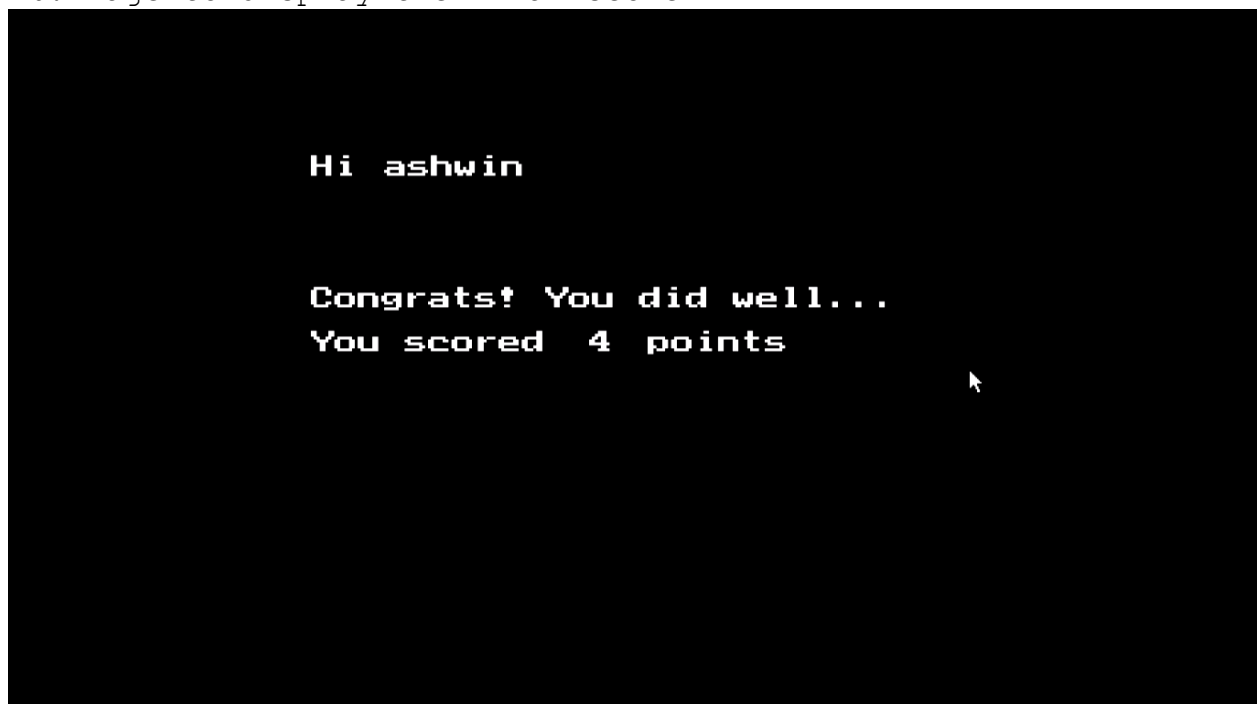
14. Pro Level



15. "Lost a Life" Screen



16. Page to display the final score



Scope for Improvement

During the days we when we wrote our synopsis, we were highly ambitious. We wanted to achieve a lot of things in a short span of time. So, now our project has three limitations

- 1.The user is unable to pause the game in between. He can only end it.
- 2.Initially we had stated that we would have three levels in the game. But we managed to add only two levels.
- 3.The paddle cannot be controlled using arrow keys.

Minimum System Requirements

Software:

- Turbo C++ (version 3.2)
- Mouse driver

Hardware:

- Keyboard
- Mouse
- 80386 and above processor
- 100MB of secondary storage
- 256MB of RAM

Conclusion

As we have seen, there are a lot of things to be learned from this. Programming isn't an easy job and it should not be taken for granted. It requires proper planning and considerable skills. The outcome of the project has been reasonable. Most importantly, it has made us learn from our mistakes and has enhanced our capacities as programmers. On the whole, these two years of programming have been helpful to us in more than one way and we are in favour of this methodology of major projects in Computer Science and hope the trend continues.

References

Books :

- Computer Science with C++ for class XI and XII by Sumita Arora
- Let us C++ by Yashwanth Kantekar