



National University
of computer and emerging sciences

Object Oriented Programming Project

Course code: CS217

BS (CS)-C

Batch: Fall 2018

Submitted by:

Hassan Shahzad 18I-0441

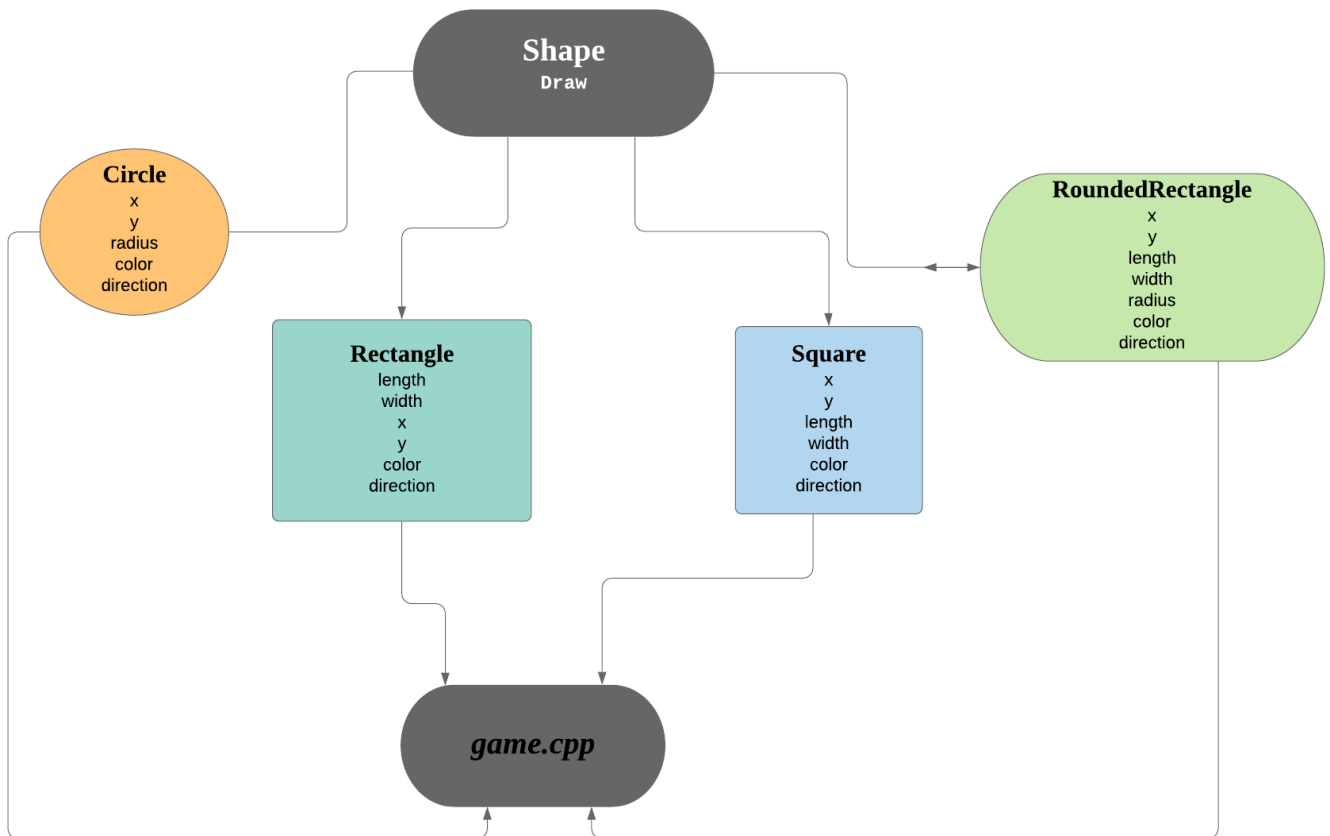
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OOP's Bubble Pop

(ScreenSaver)

Classes Structure:



Classes:

- Shape
- Circle
- Rectangle
- Square
- RoundedRectangle

Inheritance:

The parent class i.e. **Shape** is an abstract class having a pure virtual function **Draw()**. This draw has been defined differently in each class such as in the **Rectangle** class, it has been defined by using the **DrawRectangle()** function from **util.h**. Similarly in **Circle** class, it has been defined using **DrawCircle()** from **util.h**. In **Square** class, it has been defined using **DrawRectangle()** from **util.h** by keeping the length and width same. And in **RoundedRectangle** class, it has been defined using **DrawRoundedRectangle()** function from **util.h**.

Class Details:

Shape:

- virtual void Draw()=0;

Rectangle:

- x
- y
- length
- width
- direction
- color

Circle:

- x
- y
- radius
- direction
- color

Square:

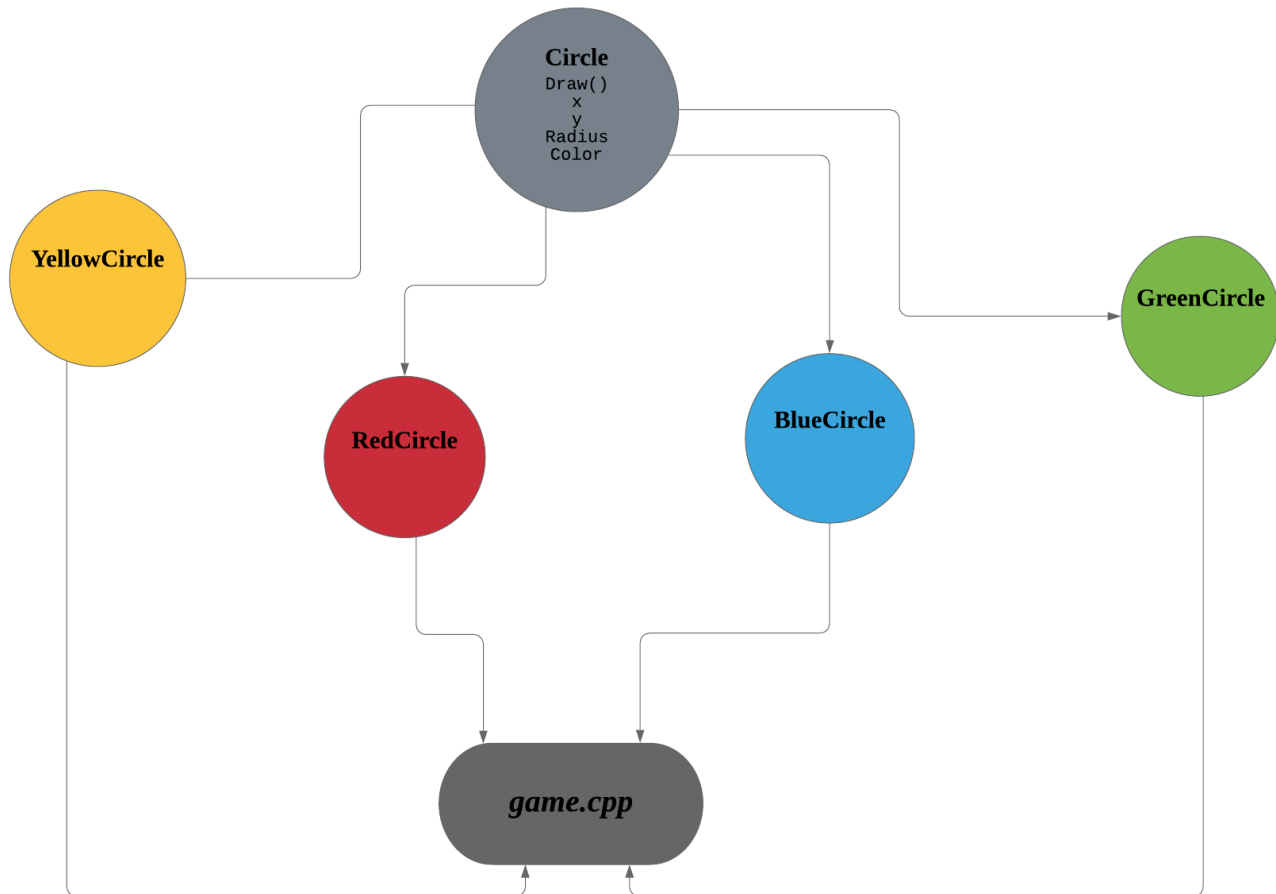
- x
- y
- length (same as width)
- width (same as length)
- direction
- color

RoundedRectangle:

- x
- y
- length
- width
- radius
- direction
- color

(Game)

Classes Structure:



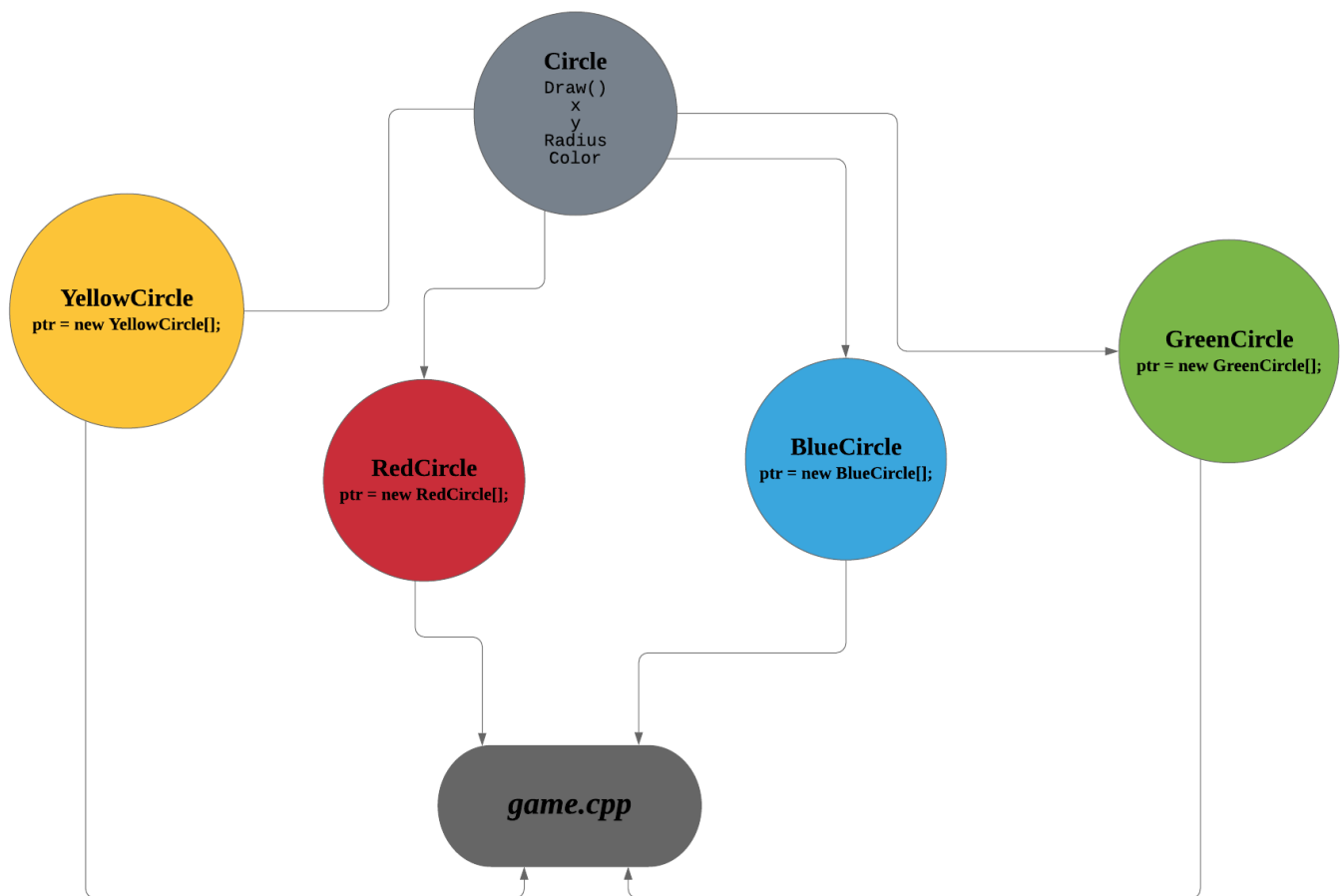
Classes:

- Circle
- YellowCircle
- RedCircle
- BlueCircle
- GreenCircle

Inheritance:

The parent class i.e. **Circle** is a pure virtual class having an abstract function naming **Draw()** which has a function in its definition which is **DrawCircle()**. This function is taken from the header file **util.h**. Now the function **Draw()** has been inherited and its definition has been altered inside the game through changing the colors in each class.

Polymorphism:



Polymorphism was used while creating circles and dragging it to collide with others. A **pointer** of the parent class was declared i.e. **Circle *ptr**. Using this pointer we **dynamically** allocated memory to **array of objects** of all of the remaining classes. Furthermore this polymorphism was also used in following functions:

- DrawCircle()
- CollisionCheck()
- MouseClicked()
- MouseMovedAndDragged()
- Display()

Game Interface:

Menu:

Upon the start of the game, a menu is displayed consisting of 5 options:

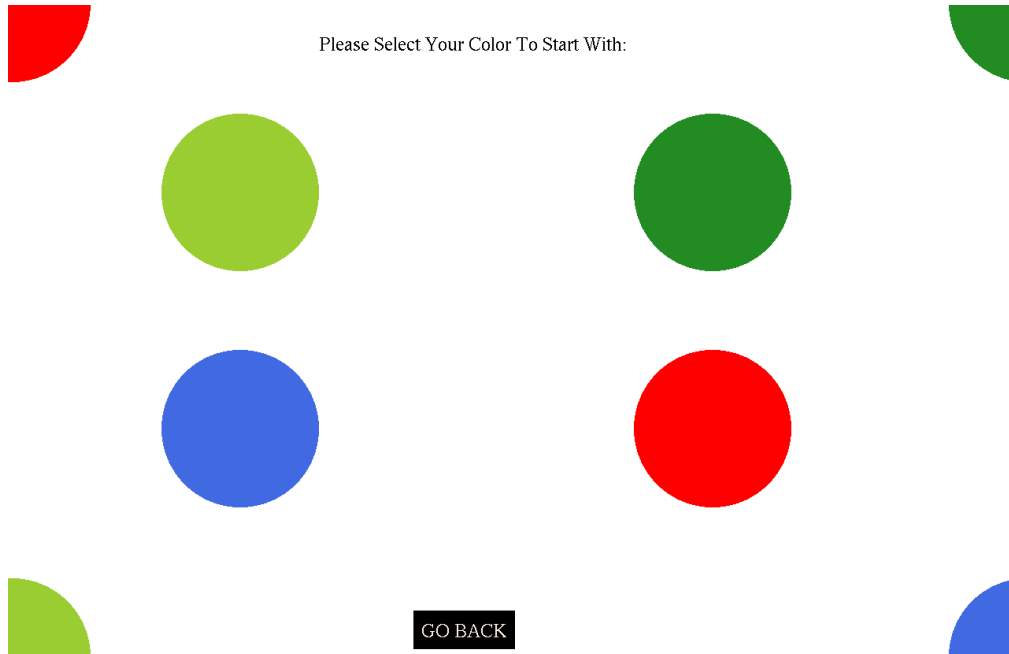
- Start Game
- Rules
- Instructions
- High Scores
- Exit Game



1: Start Game:

1.1: Color Choice:

Upon the start of game user is given 4 circles of different colors to select from.



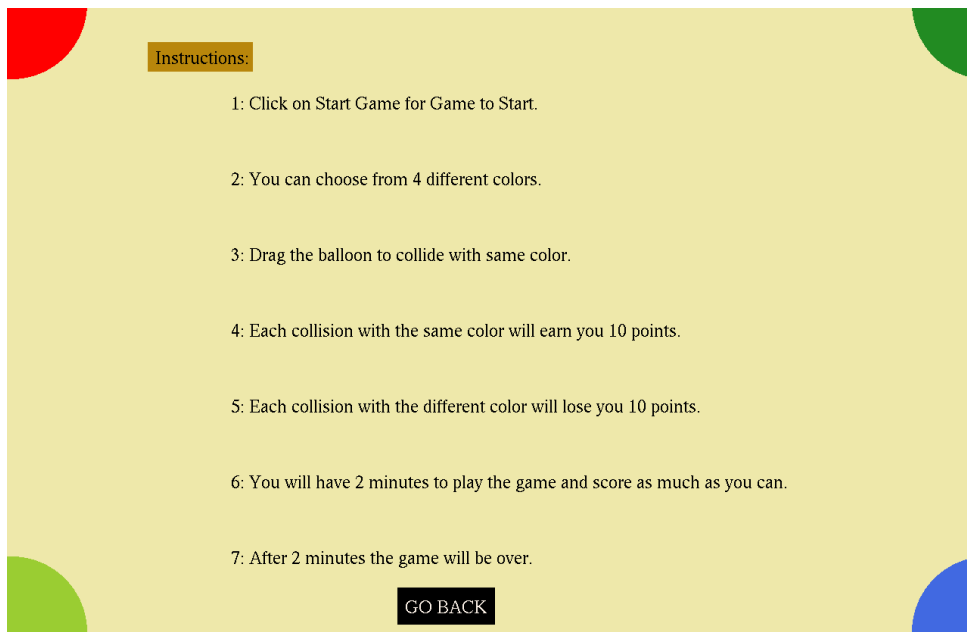
2: Rules:

When user presses the Rules option, he'll be directed to a screen with 4 rules.



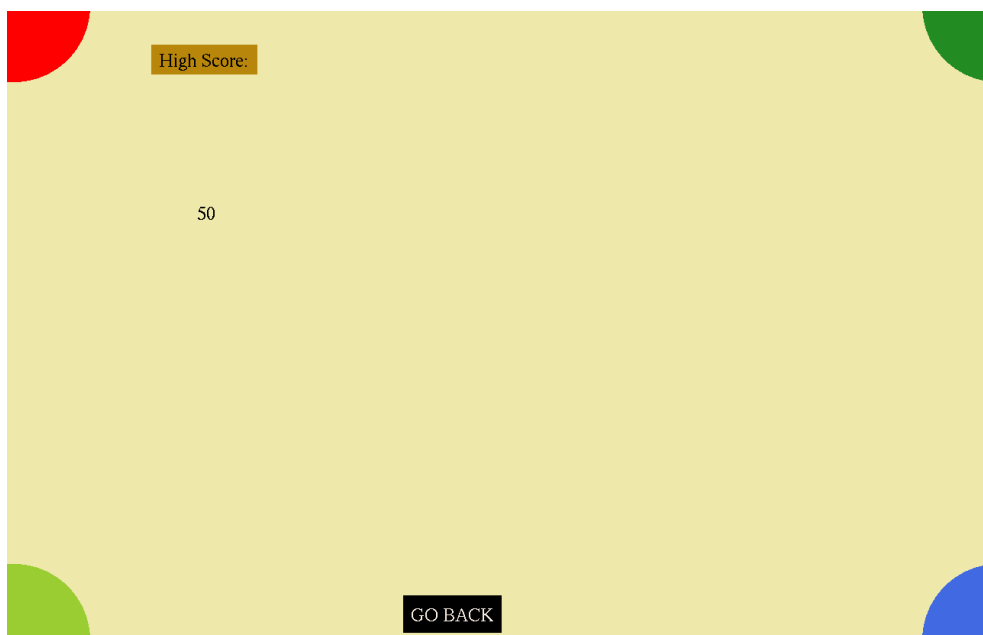
3: Instructions:

When user presses the Instructions option, he'll be directed to a screen with instructions for game.



4: High Score:

When user presses the High Score option, High Score will be displayed in a new screen.



5: Exit Game:

When user presses this option, game will be exited.

Bonus Works:

- Menu
- Score
- Timer (Game will be played for 2 minutes only)
- File Handling
- Polymorphism
- Merging of Shape
- Color Changing after collision
- Go Back Button