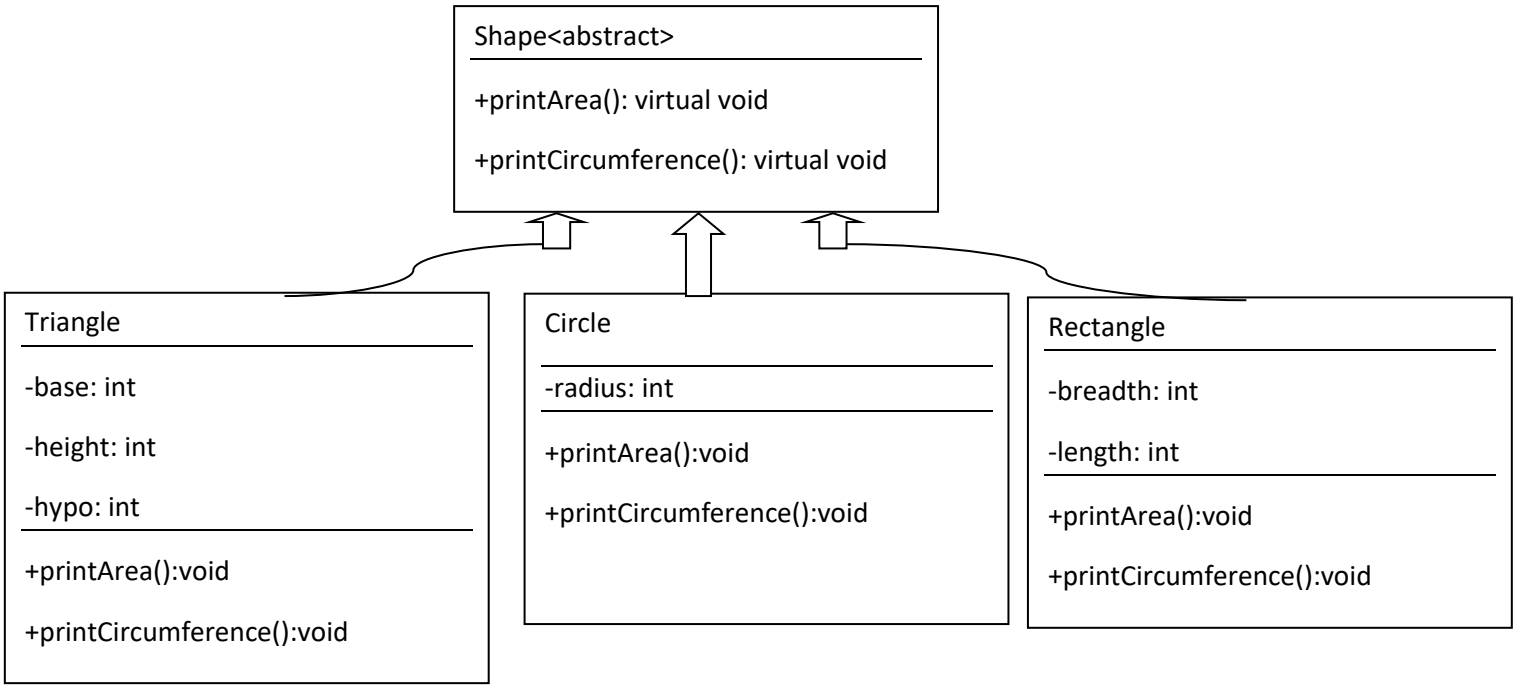
CENG 241 Lab 11

Q1- Write a C++ program that has following class diagram:



You should implement setters and getters for all the variables of each class as well as defined variables and functions above. Shape class is the abstract parent class and triangle, circle and rectangle classes are inherited from the parent class. It is required Program needs to find the area and circumferences of shapes. Also, you need to create a method: **int CalculateTotalArea (Shape **shapes)**. This method needs to calculate total area of each shapes created. Thanks to usage of polymorphism and abstract class, you may send any object from the child class of Shape class as a parameter to the function.

Sample Output:

```
Enter how many rectangles you want to create: 2
Enter how many circles you want to create: 1
Enter how many triangles you want to create: 2
------------Rectangles-------------------
Enter breadth and length respectively: 3 6
Enter breadth and length respectively: 4 5
Total Area of Rectangles: 38.0
------------Triangles-------------------
Enter base and height and hypo respectively: 6 8 10
Enter base and height and hypo respectively: 7 24 25
Total Area of Triangles: 216.0
------------Circles-------------------
Enter radius: 4
Total Area of Circles: 50.24
```

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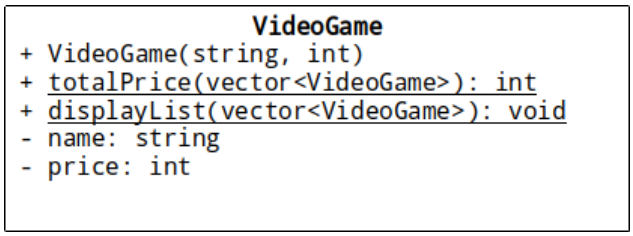
2. Implement the following class:



The overloaded constructor initializes *name* and *price*. Implement getters and setters for *name* and *price*. The static function *totalPrice()* accepts a *VideoGame* vector and calculates and returns total price of all games in it. The static function *displayList()* accepts a VideoGame vector and displays a list of all games in it.

Write a C++ program where the user is first asked to enter a file name. This file will be used for loading game information into a vector and to display contents of this vector on screen. A sample games.txt is presented in Moodle. Then ask the user for her/his total budget and ask which games s/he wants buy. If budget is enough for selected games, display an acknowledgement message on screen and quit. Otherwise, repeat this procedure.

Your program should include error handling for the following:

- Does the file exist?
- Did the user enter a valid value as budget?
- Is the user's budget enough?

Using exception handling mechanism of C++ (try/throw/catch), display an error message on screen and also keep a copy of displayed error messages in an "errors.txt" file whenever a problem arises in the program.

Sample Run

```
Enter file name: game
File does not exist!
Enter file name: games.txt
Enter your budget: -10
Budget can not be negative!
Enter your budget: 1000
Available games are:
1 - Cyberpunk2077 (249 TL)
. . .
13 - ForzaHorizon5 (299 TL)
Which games do you want to buy? (0 to stop): 1 3 5 7 8 11 0
Budget is not enough!
Which games do you want to buy? (0 to stop): 1 7 8 11 0
You have bought:
- Cyberpunk2077
- DetroitBecomeHuman
- Prey
- AssassinsCreedOrigins
Enjoy your games!

-- errors.txt --
File does not exist!
Budget can not be negative!
Budget is not enough!
```