GAME1011 – Object Oriented Programming

Practical Midterm Exam (We're not clowning around anymore...)

Midterm Instructions: Program w/ Integrated Questions

This will be an open-book exam taken during your lab period. As such, you can use any material you like EXCEPT for each other. There will be NO TALKING during the exam. You will have 2 hours to complete the midterm.

Criteria & Questions

1) Create a VisualStudio C++ empty project and add the provided .CPP file as the only Source File. Use any version of Visual Studio you have access to. No extra source or header files are required.
2) Ensure that the SadPirate class inherits publically from the Pirate class.
3) In the Pirate class, we want to ensure that the name, favColor and numParrots are inherited. Currently they cannot be. Fix this.
4) In the printParrot method of the Pirate class, increment the numParrots of the object that invoked the function. Hint: *this*
5) Create an AngryPirate class which for the most part will be very similar to the SadPirate class as it should inherit publically from the Pirate base class as well.
6) In its constructor, set the favColor of the AngryPirate class to "red".
7) Create a buyParrot in the AngryPirate class similar to the one in SadPirate. In this function, however, the color chosen will either be "red" or "orange" based on a 50% chance. Use the buyParrot of SadPirate for help. Also, make sure that you invoke the printParrot method of Pirate just like in the buyParrot of the SadPirate class.
8) Create an overloaded buyParrot in the Pirate base class that takes in a number of parrots to buy as an int parameter. Then in the function, invoke the parameterless buyParrot of the object that invoked the function as many times as specified. Sounds complicated? It's not really.
9) Create an object of the SadPirate class with a variable name of your choice. In order to invoke the proper constructor, pass in the name "Jack" and number of parrots as 1.
10) Create an object of the AngryPirate class with a variable name of your choice. In order to invoke the proper constructor, pass in the name "Barbossa" and number of parrots as 3.

11) Create an overloaded operator+ function that takes in two parameters: an integer and pointer (or reference if you prefer) to a Pirate class. References are much easier to work with, trust me. In the function, add the integer to the numParrots from the object that is the second parameter then return the result. Yes, you CAN use Pirate as the second parameter's type and not a specific SadPirate or AngryPirate if we want to access the numParrots.
12) In the main() add the following extra code snippets:
    a. Using the SadPirate object, call its buyParrot
    b. Using the AngryPirate object, call its buyParrot
    c. Using either of the Pirate objects, call the overloaded buyParrot located in the Pirate base class by passing in 3 as the number of parrots to buy. Hint: you'll need to access the Parrot base class through the object and use the scope resolution operator.
    d. Finally, use the two cout lines provided for you and replace the commented out text with a call to the overloaded operator+ function you made. It's up to you to figure out how to use it and with what operands. Hint: there are two
13) Ensure that Pirate cannot be instantiated. Hint: Abstract. I WILL be checking for this. Part of the Code Snippet criteria. There is a function I declared in Pirate and commented it out that would work for this.
14) Finally, get the program to compile and run. Good luck.

Final instructions... IMPORTANT!!!

Make sure you rename the files now if you haven't already. You can submit your entire project folder to me. When you are done, compress the folder into a .zip/.7z or .rar and rename the folder as well with your lastname and firstname. I will come around and collect it on my USB drive.

Percentage: 20% of final grade

Marking Scheme

The marking scheme will be as follows:

Task	Possible Marks	Description
Program Execution	4	Your program executes the lines in main() properly
Code Snippets	4	You filled in all the snippets of required code in the program
Operator+ Function	4	You created the operator+ function properly
AngryPirate Class	4	You created the required members of the AngryPirate class properly
Overloaded buyParrot	4	You specifically created the buyParrot in AngryPirate and an overloaded one in Pirate
Total:	**20**	

Submission:

Filenames: **GAME1011_Midterm_LastnameFirstname.zip**