CS 201 Homework 8

This assignment is focused on *Classes.*

Grading

- (Pass/Fail) Programs compile and run
- (Pass/Fail) GitHub Project with link to GitHub repository
- (Pass/Fail) Overleaf Report written in LaTeX
- (Pass/Fail) Report submitted on Blackboard as a PDF (lastname.firstname-hwN.pdf)
- (50 pts) Report contains *design* paragraph (~100 words)
- (50 pts) Report contains *post mortem* paragraph (~100 words)
- (50 pts) Report questions
- (50 pts) Report contains *sample run*
- (50 pts) Source Code has *Makefile* or Visual Solution *.sln*
- (50 pts) Source Code is neat and documented
    - Name, Class, Date and Description at top
    - All functions and classes have documentation (besides `main()`)
- (100 pts) 2 of the *additional programs* are completed
- (100 pts) GitHub frequent commits (use program name in your text)

General Requirements

Programs that do not compile will not be graded; there is no point in turning in code that does not compile. For full credit, turn in only what was requested - no project files, executables, etc. As always:

- Code should compile, execute and work correctly.
- It should be clear to the user what the program is doing and what the user is expected to do.
- The source code should begin with comments indicating the source file's filename, author, date, and purpose.
- The source code should be neat and readable.
- Functions should be commented with their purpose.
- Other comments should be used anywhere things might not be completely clear.

Questions

- What is the difference between a class and an object?
- Explain public vs. private, as they apply to members of a C++ class.
- What does it mean when we declare a member function const?
- How do we declare a member function const, i.e. where does the const keyword go?
- What is a constructor? What is its name?
- What is the default constructor?
- What is overloading?
- C++ allows overloading of functions. What does this mean for constructors?
- How do we define a member function outside the class definition?

- What is a destructor?

Main Program (asciiart.cpp)

Create an RGBImage Class that will allow the following main() to read in a PPM image and output an ASCII Art version of the PPM image. Only make changes in main() if they are absolutely necessary. All of the work should be done in the class.

```
int main()
{
  RGBImage ppm("parrot.ppm");
  ppm.toASCII();
}
```

Additional Program 1 (ppm2pgm.cpp)

Modify your RGBImage Class from asciiart.cpp so that it also outputs a PGM file. Once again, all of your code should go into the class and not main(). Note that this version of RGBImage should still work with asciiart.cpp. Your main should be very close to this:

```
int main()
{
  RGBImage ppm("parrot.ppm");
  ppm.writePGMfile("parrot.pgm");
}
```

Additional Program 2

Take the C++ program you are most proud of this semester and improve/polish it. Include screenshots of your final work.

Additional Program 3

Take a C++ program that you wrote this semester that is the least finished and finish it. Include screenshots of your final work.