Technical Quiz - UBC Sailbot Software

Programming

Using C++, please write a class, named StandardCalc, that contains the following methods. You may use any resources you find but must complete the quiz individually.

Keep your code clean, use the Google C++ Style Guide.

1. An autonomous sailing program uses angles between -180 and 179. Create a method with the following declaration:

```
/**
 * Bounds the provided angle between [-180, 180) degrees.
 * Ex. 360 becomes 0, 270 becomes -90, -450 becomes -90.
 * @param angle Input angle in degrees.
 * @return The bounded angle in degrees.
 */
float BoundTo180(float angle);
```

2. It's incredibly valuable to be able to determine an angle is between two others. Create a method with the following declaration:

```
/**
 * Determines whether |middle_angle| is in the acute angle between the other two
bounding angles.
 * Note: Input angles are bounded to 180 for safety.
 * Ex. -180 is between -90 and 110 but not between -90 and 80.
 * @param first_angle First angle in degrees.
 * @param middle_angle Middle angle in degrees.
 * @param second_angle Second angle in degrees.
 * @return Whether |middle_angle| is between |first_angle| and |second_angle|
(exclusive).
 */
bool IsAngleBetween(float first_angle, float middle_angle, float second_angle);
```

1. Unit test your methods with a testing framework of your choosing. Bonus points for Google Test.

Version Control

For the following questions, write out Git commands as you would from command line. Write your answer in a file named `sailbot_git_questions.txt`.

1. How would you clone this repository onto your computer?
2. Suppose you have some uncommitted changes with a desired message: "`Tuned wind angles and added unit tests.`" You have a modified file `wind_angles.inc` and added a new file `TestWindAngles.h`. How would you submit all of your changes to the remote repository you cloned above?