cis1.5, spring 2009, project I / prof sklar.

1 overview

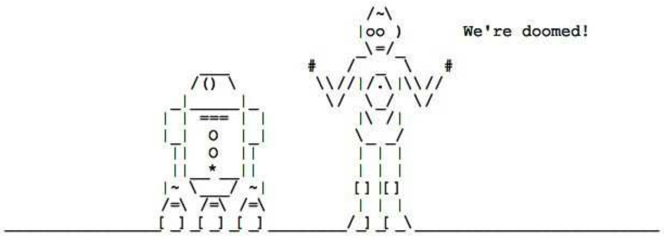
- This is the project for unit I of cis 1.5. This project covers displaying simple information and remembering it (i.e., output and data).
- The project is worth 10% of your term grade. It will be marked out of **10 points**.
- The project is due via email on **Monday February 16**.
- Email the project to: `sklar@sci.brooklyn.cuny.edu`.
- Use a **zip** utility to bundle all your files together and send them as ONE attachment to the email.
  on a PC: use **WinZip**
  on a Mac: use **File** - **Create Archive...**
  on Linux: use **zip**
- Note that the first two questions, each worth 3 points, are the same as those given in Lab I.4.
- Note that if you are using an IDE, all your C++ source code files will be named **main.cpp**. You will have to rename them before putting them in the zip archive!

2 Drawing with ASCII characters

(3 points)

- Have a look at the "ASCIIMATION" web site: `http://www.asciimation.co.nz/`
  (but don't spend the whole class watching it...)

  This site features "ASCII" animation, which is comprised of a series of many images that are cleverly drawn using only ASCII characters, like the image below:



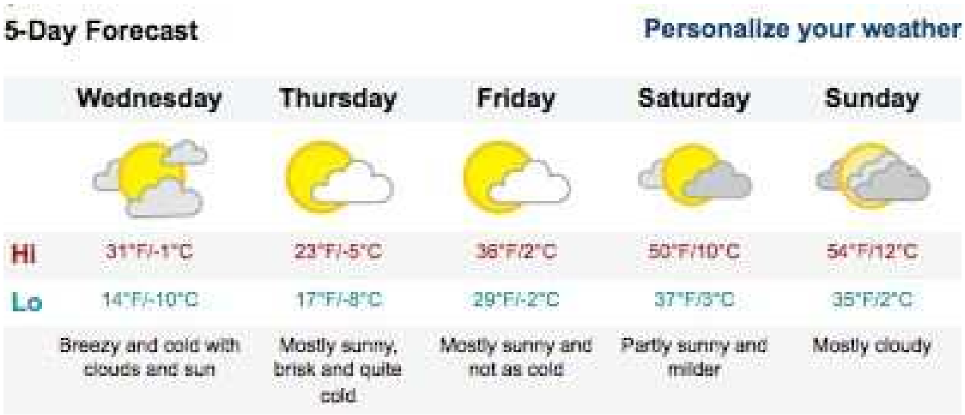
- In your text editor, open a temporary file (call it "tmp") and design a picture using ASCII drawing.
  (edit → `student$ pico tmp`)
- Then create a new C++ file, called **draw.cpp** and place inside the `main()` function, a series of `cout` statements that will produce the drawing you designed in your **tmp** file.
  (`student$ pico draw.cpp`)

  Hint: you will probably have to output blank spaces to get things to line up the way you want
- Compile and run your code, to make sure it does what you want. Edit again, as needed.
  (compile → `student$ g ++  draw.cpp -o draw`)
  (run → `student$ ./draw`)

3 Weathering the storm

(3 points)

- Below is the weather forecast for this week:



5-Day Forecast

Personalize your weather

	Wednesday	Thursday	Friday	Saturday	Sunday
Hi	31°F/-1°C	23°F/-5°C	36°F/2°C	50°F/10°C	54°F/12°C
Lo	14°F/-10°C	17°F/-8°C	29°F/-2°C	37°F/3°C	35°F/2°C
	Breezy and cold with clouds and sun	Mostly sunny, brisk and quite cold	Mostly sunny and not as cold	Partly sunny and milder	Mostly cloudy

- Write a program that computes (and outputs) the average high temperature for the week, and the average low temperature for the week.

  Hint: think about this on paper before you start typing on the computer. See if you can design the code in your notebook first, then type it in and see how it works. Note where you need to make corrections.

  Hint: you will need to use a `float` *variable for storing the averages.*

- Name your program **weather.cpp**.

4 Living in a robot's world

(4 points)

- Imagine that you have a robot that lives in a 2-dimensional world that is made up of grid squares. The world is 12×12 squares in size, like this:

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5							R					
6												
7												
8												
9												
10												
11												
12												

The "R" shows where the robot is currently sitting in its world; in this case, it is in column 7 of row 5. We can express this as an (x, y) coordinate, where x is the column and y is the row; which means that, above, the robot is sitting in grid square $(7, 5)$.

- The robot can move in any of four directions: N (north), S (south), E (east) or W (west). Each letter (N, S, E, W) represents a command sent to the robot. Each command that the robot receives causes it to move one square in the direction indicated by the command.

  For example, if the robot, as above, is in grid square $(7, 5)$ and receives the command N, then it will move one square to the north and end up in grid square $(7, 4)$.

- Write a program that computes the location of the robot, as follows. Assume that the robot's initial location is $(7, 5)$.

  - Define two integer variables called x and y which represent the robot's current location.
  - Print out the robot's current location, in a friendly format. For example:

    ```
    The robot is located at (7,5).
    ```

  - The robot receives an N command and moves one square north. Update the values of x and/or y accordingly and print out the robot's new location, as well as the command it received. For example:

    ```
    The robot received a command to move North. It is now located at (7,4).
    ```

  - The robot receives an E command and moves one square east. Update the values of x and/or y accordingly and print out the robot's new location, as well as the command it received.
  - The robot receives an N command and moves one square north. Update the values of x and/or y accordingly and print out the robot's new location, as well as the command it received.
  - The robot receives an W command and moves one square west. Update the values of x and/or y accordingly and print out the robot's new location, as well as the command it received.
  - The robot receives an S command and moves one square south. Update the values of x and/or y accordingly and print out the robot's new location, as well as the command it received.

- Name your program **robot1.cpp**

5 Submission

- You will be submitting THREE files:
  - draw.cpp
  - weather.cpp
  - robot1.cpp
- Make sure that you have a COMMENT at the top of each file that contains the name of the file, YOUR NAME, "CIS 1.5 PROJECT 1" and the submission date (February 16, 2009).
- As above, use the zip utility to create a single archive containing all three files. Attach that archive to an email message to me.
- The subject line of your email should say: CIS 1.5 PROJECT 1