

COSC 1P02 Assignment 1

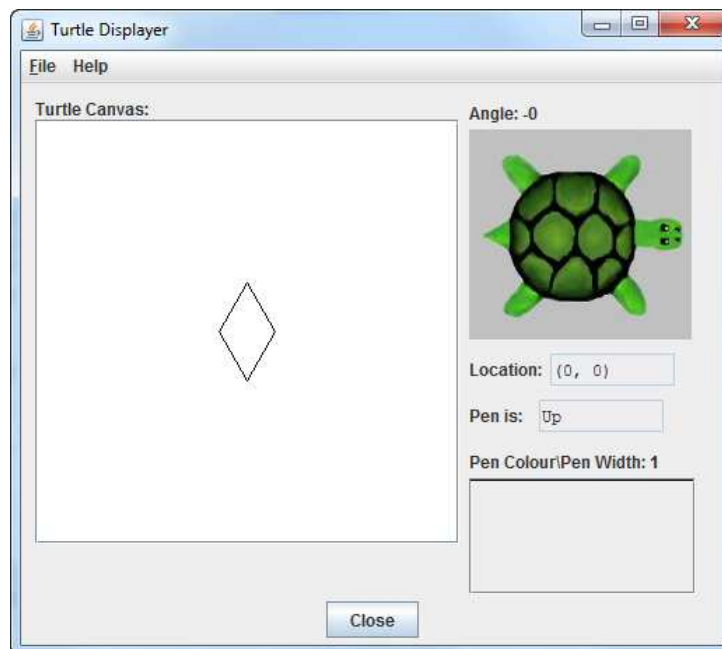
Diamonds are Forever

Due: Oct. 15, 2012 @ 10:00am

In preparation for this assignment, create a folder called `Assign1` and then, within this folder, three folders called `Assign_1_A`, `Assign_1_B` and `Assign_1_C` for the DrJava projects for the three parts of the assignment.

Part A

As part of a package called `Assign_1_A`, write a Java class called `Diamond` that draws a diamond shape on the display as shown below. The diamond has sides of length 40. The angle between the sides at the top and bottom is $2\pi/3$ and the angle between the sides at left and right is $\pi/3$. This makes the diamond 40 units wide and about 69 units high (actually $40\sqrt{3}$).

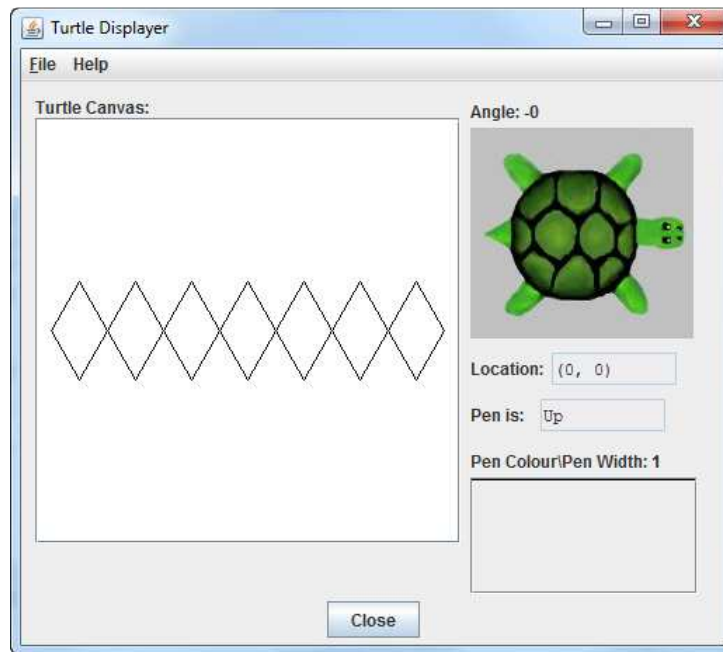


If you draw from the center, the angle to aim down the bottom-right side is $\pi/2 + \pi/6$ (like a hexagon). If you draw from the left-hand vertex (point), the angle to aim up the top-left side is $\pi/3$.

Use a for loop to draw the diamond. Since the angles are different top/bottom – left/right, the loop will have to draw 2 sides and repeat twice. Be sure you know where the turtle winds up relative to where you started.

Part B

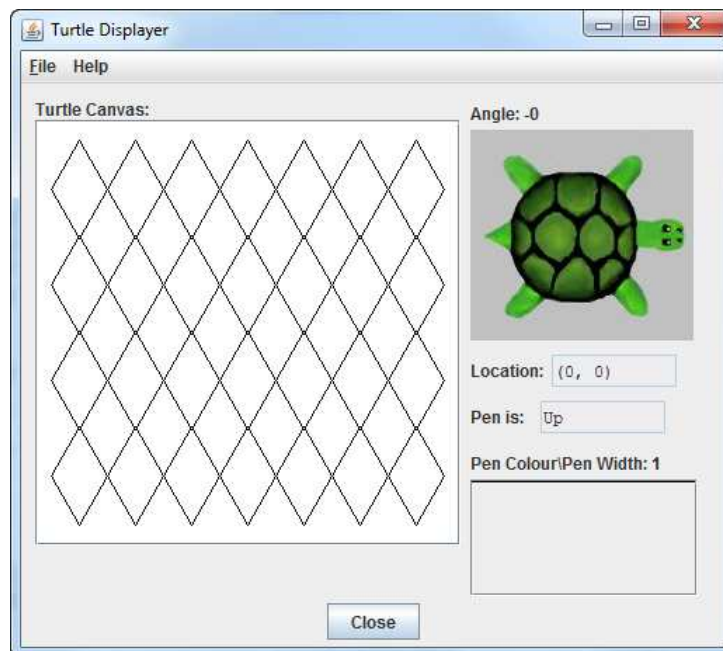
As part of a package called `Assign_1_B`, write a Java class called `DiamondRow` that draws a row of diamonds across the display as shown below. Since the diamonds are 40 units wide, only 7 will fit and there will be 10 units of space at each side if the diamonds are centered.



Use a for loop to draw the series of 7 diamonds. You may copy and paste the code from Part A that draws a single diamond for use in this part. Be sure you know where the turtle winds up relative to where you started.

Part C

As part of a package called `Assign_1_C`, write a Java class called `DiamondTiles` that tiles the surface of the displayer with diamonds by drawing successive rows of diamond as shown below. Since the diamonds are about 69 units high, only 4 rows will fit and there will be about 12 units of space above and below the tiles.



Use a for loop to draw the 4 rows of diamond tiles. You may copy and paste the code from Part B that draws a row of diamonds for use in this part. The turtle may be left at any reasonable position.

Submission:

Details regarding preparation and submission of assignments in COSC 1P02 are found on the COSC 1P02 website at URL: <http://www.cosc.brocku.ca/Offerings/1P02/AssignGuide.pdf>. This document includes a discussion of assignment preparation, programming standards, evaluation criteria and academic conduct (including styles for citation) in addition to the detailed assignment submission process copied below.

To prepare and submit the assignment electronically from the lab, follow the procedure below:

1. Ensure your folder (say `Assign1`) for the assignment is stored on your `Z :` drive.
2. Using DrJava, print (to PDFCreator) each of the `.java` files of your assignment using the name `ClassName.pdf` where `ClassName` is the class name (i.e. same name as the `.java` file) and save the `.pdf` file at the **top level** of the project folder (i.e. directly within `Assign1`).
3. Run the programs for the three parts. In each case, when the display is finished (i.e. `Close` button visible), select `Print Image of Window...` from the `File` menu on the `Turtle Displayer` and direct the output to PDFCreator and saving the `.pdf` file at the **top level** of the project folder using an appropriate name (e.g. `PartA.pdf`).
4. Run PuTTY by selecting PuTTY under `All Programs` in the `Start` menu.
5. Double-click `sandcastle` in the `Load, save ...` entry.
6. Enter your Brock userid and press the `Enter` key.
7. Once you have the `sandcastle%` prompt, navigate to your project directory for your assignment (say `Assign1`).

Here are a few useful commands (press `Enter` after typing the command):

<code>ls -l</code>	- list files in current directory
<code>cd <directory name></code>	- changes to the specified subdirectory (note, do not include the <code><></code>)
	e.g. <code>cd Assign1</code>
<code>cd ..</code>	- go up 1 directory level

Note: If your file or folder names include spaces or special characters, you have to enclose the name in quotes, e.g. `cd "COSC 1P02"`.

8. Once you have confirmed you are in the correct project directory, type the command `submit1p02` and follow the instructions. It is important to note that the script will copy everything from the current directory and its subfolders to the 1P02 electronic drop box. It is important you are in the correct directory when you run the script. The script will confirm what you have submitted.
9. Log off sandcastle by typing `logout`.

For help in submitting an assignment from home see the COSC Help Center at URL:

<http://www.cosc.brocku.ca/help/esubmit>.

DrJava

The folder from which you do the electronic submission should contain the project folder, including all files relevant to the project—the `.java` and `.class` files for the assignment and `.pdf` files for

program listings and output.

Other platforms

If you are using an IDE other than DrJava to prepare your assignment at home, you must copy your code into DrJava to create new project(s) and then compile and run and prepare the submission as above. Your electronic submission must only include DrJava project folders.