|  |  |
| --- | --- |
| **Computer Science 1** | **Lab 08A**  **Multi-Day Major Python Assignment** |
| **Repetition with Turtle Graphics** | **50 *through* 110 Point Versions** |
| **Assignment Purpose:**  The purpose of this lab assignment is to gain understanding of repetition control structures, like the **for** loop, visually using *Turtle Graphics*. | |

This assignment is similar to Lab 5A in that it uses *Turtle Graphics* and requires you to create a series of shapes and designs. The difference is now the shapes and designs are more complicated and require the use of a **for** loop.

You will start with a grade of **50** and earn **5** points for each shape/design completed. Completing any 10 out of 12 will earn a grade of 100. Completing all 12 will earn the maximum grade of **110**.

A *skeleton* for the program has been written for you. If you look at the provided code, you see the proper libraries have been imported and the dimensions of the Turtle Graphics window have been “set up”. Then there are 12 different sections, one for each shape/design. Each section begins with a comment showing its name and ends with 4 commands. These commands are commented out for now. In-between is where you write the code for that particular shape/design. Once you do, you need to uncomment the **update**, **sleep**, **reset** and **tracer** commands so that after the computer draws the shape/design, it will update the screen, wait one second, and reset the window and speed up the turtle for the next shape/design.

NOTE: If you need more space to write your code, you can just press the <enter> key and insert as many blank lines as you wish.

|  |  |
| --- | --- |
| **Lab 08A Student Version** | **Do not copy this file, which is provided.** |
| **1 # Lab08Ast.py  2 # "Repetition with Turtle Graphics"  3 # This is the student, starting version of Lab 08A.  4 # After completing each shape, student need to "un-comment"  5 # the 4 commands which follow before they start the next shape.  6   7   8 from turtle import \*   9 from time import sleep  10   11 setup(1300,700)  12 tracer(0,0)   13   14   15 #######################  16 # Solid Red Octagon #  17 #######################  18   19   20   21   22   23   24 #update()  25 #sleep(1)  26 #reset()  27 #tracer(0,0)  28   29   30 ###################  31 # 12 Point Star #  32 ###################  33   34   35   36   37   38   39 #update()  40 #sleep(1)  41 #reset()  42 #tracer(0,0)  43   44   45 ###############  46 # Plus Sign #  47 ###############  48   49   50   51   52   53   54 #update()  55 #sleep(1)  56 #reset()  57 #tracer(0,0)  58   59   60 ###############  61 # Snowflake #  62 ###############  63   64   65   66   67   68   69 #update()  70 #sleep(1)  71 #reset()  72 #tracer(0,0)  73   74   75 ############  76 # Circle #  77 ############  78   79   80   81   82   83   84 #update()  85 #sleep(1)  86 #reset()  87 #tracer(0,0)  88   89   90 #############  91 # Zig-Zag #  92 #############  93   94   95   96   97   98   99 #update() 100 #sleep(1) 101 #reset() 102 #tracer(0,0) 103  104  105 ################## 106 # Cool Pattern # 107 ################## 108  109  110  111  112  113  114 #update() 115 #sleep(1) 116 #reset() 117 #tracer(0,0) 118  119  120 ########################## 121 # Flower of 10 Squares # 122 ########################## 123  124  125  126  127  128  129 #update() 130 #sleep(1) 131 #reset() 132 #tracer(0,0) 133  134  135 ########################## 136 # Flower of 12 Circles # 137 ########################## 138  139  140  141  142  143  144 #update() 145 #sleep(1) 146 #reset() 147 #tracer(0,0) 148  149  150 ################################## 151 # Comet a.k.a. Thickening Line # 152 ################################## 153  154  155  156  157  158  159 #update() 160 #sleep(1) 161 #reset() 162 #tracer(0,0) 163  164  165 ################ 166 # Box Spiral # 167 ################ 168  169  170  171  172  173  174 #update() 175 #sleep(1) 176 #reset() 177 #tracer(0,0) 178  179  180 ################## 181 # Round Spiral # 182 ################## 183  184  185  186  187  188  189  190  191  192  193 update() 194 done() 195** | |

**110 Point Version Specifics and Output**

You need to display each of the shapes/designs below, one at a time. Remember uncomment the 4 commands after each shape/design that you finish.

|  |  |
| --- | --- |
| Solid Red Octagon | 12-Point Star |
| Plus Sign | Snowflake |
| Circle | Zig-Zag |
| Cool Pattern | Flower of 10 Squares |
| Flower of 12 Circles | Comet a.k.a. Thickening Line |
| Box Spiral | Round Spiral |

The following needs to be understood when doing this assignment:

1. This project will take more than one class period. You must save your work so you can continue to work on it later. It may be necessary that you work on your project at home as well.

2. You do the shapes/designs of this assignment in any order. Just make sure you put each in its proper location in the program. Regardless of the order in which you created the different shapes and designs, it will still execute in the same order (Solid Red Octagon, 12-Point Star, Plus Sign, etc.)

3. Your drawings should be similar to the drawings shown in the provided output, but they do not have to match exactly:

a. Your pictures may be bigger or smaller.

b. Your pictures may be in a different part of the screen.

c. Your “turtle” may have a different final resting position.

d. However, one thing that must match is the *orientation*. Your drawings must be rotated the same way as the drawings shown in the provided output.

4. You will only receive credit for a shape/design that is completely drawn. There is no partial credit for partially drawn shapes or designs.