**Outline**

t.b.d.

**Objectives**

* tbd

**Materials**

* tbd

**Level 0: Teacher Demo of Sample Programs**

1. **Sample program #1 is an example of a "Syntax Error". Follow the teacher demo and explain the characteristics of a syntax error. Consider the following criteria:**
   1. **Did the program have an error before starting to run?**  
      yes
   2. **Did the program encounter an error before it finished running?**  
      didn’t run
   3. **Did the program do what it was supposed to do?**

didn’t run

1. **Sample program #2 is an example of a "Run-time Error". Follow the teacher demo and explain the characteristics of a run-time error. Consider the following criteria:**
   1. **Did the program have an error before starting to run?**no
   2. **Did the program encounter an error before it finished running?**  
      no
   3. **Did the program do what it was supposed to do?**

no

1. **Sample program #3 is an example of a "Logic Error". Follow the teacher demo and explain the characteristics of a logic error. Consider the following criteria:**
   1. **Did the program have an error before starting to run?**no
   2. **Did the program encounter an error before it finished running?**no
   3. **Did the program do what it was supposed to do?**

no

**Level 1: Syntax Errors**

1. **Research the definition of the word "Syntax". Summarize its meaning below and how it relates to computer languages and programming.**

The set of rules to process or form something. It refers to grammar and spelling mistakes made in computer programming. Computers only understand exact words therefore the expected form of spelling is called syntax.

1. **Research the definition of a "Syntax Error" related to computer programming. Summarize this definition below.**

When something is misspelled. If you spell something wrong in computer programming, you will have to rewrite it correctly to fix the syntax error

1. **Explain why Sample Program #1 is an example of a "Syntax Error".**

Error on line 9

1. **Find and correct the syntax errors in Sample Program #1. Provide a listing of your corrected program below.** 
   * **Use a "#" at the beginning of each line containing an error   
     to "Comment Out" the bad code**
   * **List the corrected code line underneath the commented out error line**

**Level 2: Run-time Errors**

1. **Research the definition of a "Run-time Error" related to computer programming. Summarize this definition below.**

A runtime error is an error that occurs while the program is running.

1. **Explain why Sample Program #2 is an example of a "Run-time Error".**

The program runs and stops in between the code

1. **Find and correct the run-time errors in Sample Program #2. Provide a listing of your corrected program below.** 
   * **Use a "#" at the beginning of each line containing an error   
     to "Comment Out" the bad code**
   * **List the corrected code line underneath the commented out error line**
2. **Explain the difference between a "syntax error" and a "run-time error".**

Syntax error states the error before the program starts and runtime does it while it runs

**Level 3: Logic Errors**

1. **Research the definition of a "Logic Error" related to computer programming. Summarize this definition below.**

A logic error produces the wrong output.

1. **Explain why Sample Program #3 is an example of a "Logic Error".**

The color given was (rgb) but the computer turned the circles all black

1. **Find and correct the logic errors in Sample Program #3. Provide a listing of your corrected program below.** 
   * **Use a "#" at the beginning of each line containing an error   
     to "Comment Out" the bad code**
   * **List the corrected code line underneath the commented out error line**
2. **Explain the difference between a "logic error" and a "syntax error".**

Logic error runs the whole program with a mistake but it doesn’t stop while syntax error stops before the program runs

1. **Explain the difference between a "logic error" and a "run-time error".**

Runtime and logic both run but runtime gets an error while running and stops while logic error doesn’t know where it made a mistake.

**Level 4: Your Sample Program**

1. **Create a sample program to show the different types of programming errors. Provide your program listing below.**
   * **Your program must be of your own design and must be different from the sample programs provided in this module.**
   * **Your program must contain at least one example of each of: a syntax error, a run-time error, and a logic error.**
   * **Provide the corrected code in a comment underneath the error code (using a "#" at the beginning of the comment line).**

Syntax error

import turtle

myturtle = turtle.Turtle()

myturtle.speed(0)

def square(length,angle):

for i in range(4):

# myturtle.forward(length)

myturtle.right(angle)

for i in range(150):

square(100,200)

myturtle.right(25)

corrected

import turtle

myturtle = turtle.Turtle()

myturtle.speed(0)

def square(length,angle):

for i in range(4):

myturtle.forward(length)

myturtle.right(angle)

for i in range(150):

square(100,200)

myturtle.right(25)

runtime error (bottom part of code)

import turtle

myturtle = turtle.Turtle()

myturtle.speed(0)

def square(length,angle):

for i in range(4):

myturtle.forward(length)

myturtle.right(angle)

for i in range(150):

square(100,200)

myturtle.right(25)

for i in range(4) :

circle(200)

myturtle.right(25)

code ran but stopped at line 15

**SAMPLE PROGRAM #1 - Syntax Error**

import turtle

myPen = turtle.Turtle()

#circleColors = [(196,196,0),(196,0,196),(0,196,196)]

def drawCircle(rgb) :

myPen.down(

myPen.color(rgb)

#myPen.begin\_fill()

myPen.circle(8)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

circleNumber = 0

for circleIndex in range(3) :

# drawCircle(circleColours[circleNumber])

circleNumber = circleNumber + 1

import turtle

myPen = turtle.Turtle()

**circleColors** = [(196,196,0),(196,0,196),(0,196,196)]

def drawCircle(rgb) :

myPen.down()

myPen.color(rgb)

#myPen.begin\_fill()

myPen.circle(10)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

circleNumber = 0

for circleIndex in range(3) :

**drawCircle(circleColors[circleNumber])**

circleNumber = circleNumber + 1

**SAMPLE PROGRAM #2 - Run-time Error**

import turtle

myPen = turtle.Turtle()

circleColours = [(196,196,0),(196,0,196),(0,196,196)]

def drawCircle(rgb) :

myPen.down()

myPen.color(rgb)

myPen.begin\_fill()

myPen.circle(8)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

circleNumber = 1

for circleIndex in range(4) :

# drawCircle(circleColours[circleNumber])

circleNumber = circleNumber + 1

**circleNumber = 1**

**for circleIndex in range(4) :**

**drawCircle(circleColours[circleNumber])**

**circleNumber = circleNumber + 1**

**indented line 17, start line 18 with no indent.**

**SAMPLE PROGRAM #3 - Logic Error**

import turtle

myPen = turtle.Turtle()

circleColours = [(196,196,0),(196,0,196),(0,196,196)]

def drawCircle(rgb) :

myPen.down()

myPen.begin\_fill()

myPen.circle(8)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

numOfCircles = 3

for circleIndex in range(2) :

circleNumber = numOfCircles - circleIndex - 1

drawCircle(circleColours[circleNumber])

import turtle

myPen = turtle.Turtle()

circleColours = [(196,196,0),(222,0,11),(0,196,196)]

def drawCircle(circleColours) :

myPen.down()

myPen.begin\_fill()

myPen.circle(8)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

numOfCircles = 3

for circleIndex in range(3) :

circleNumber = numOfCircles - circleIndex - 1

drawCircle(circleColours[circleNumber])