**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?

No, it didn’t start sunning because it got an error.

* 1. Did the program encounter an error before it finished running?  
     Not applicable because the program failed on question a.
  2. Did the program do what it was supposed to do?

Not applicable because the program failed on question a.

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?  
      It started running.

* 1. Did the program encounter an error before it finished running?  
     Yes, although it didn’t make the last circle.
  2. Did the program do what it was supposed to do?

The program didn’t do what it was supposed to do because it only made 2 circles not3 circles.

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?

It started running.

* 1. Did the program encounter an error before it finished running?  
     There were no errors, it just stopped running.
  2. Did the program do what it was supposed to do?

The program didn’t do what it was supposed because it made black circles which was a logic error.

**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.

To create a well-structured sentence using words or phrases in a language.

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

Is an error in the syntax of arrangement of characters in the programming language.

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

The Sample Program #1 is an example of a “Syntax Error” because there is an error in the arrangement of characters in python.

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

import turtle

myPen = turtle.Turtle()

#Comment Out

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

def drawCircle(rgb) :

myPen.down()

myPen.color(rgb)

# Comment Out

myPen.begin\_fill()

myPen.circle(8)

myPen.end\_fill()

myPen.up()

myPen.forward(22)

circleNumber = 0

for circleIndex in range(3) :

# Comment Out

drawCircle(circleColours[circleNumber])

circleNumber = circleNumber + 1

**Level 2: Run-time Errors**

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

A Run-Time Error is when an error occurs while the program is running.

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

Sample Program #2 is an example of a Run-Time Error because the program encountered an error while it was running.

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

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) :

# Comment Out

drawCircle(circleColours[circleNumber])

circleNumber = circleNumber + 1

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

The difference between them is that a Syntax Error stops before the program runs and a Run-Time Error is when an error occurs while the program is running so it stops.

**Level 3: Logic Errors**

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

A Logic Error is when a bug causes the program your using to operate incorrectly.

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

Sample Program #3 is an example of a Logic Error because the program was supposed to create a lime green, magenta and aqua blue circle instead it made an error and created 2 black circles.

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

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

# Comment Out

for circleIndex in range(numOfCircles) :

circleNumber = numOfCircles - circleIndex - 1

drawCircle(circleColours[circleNumber])

1. Explain the difference between a "logic error" and a "syntax error".

A Logic Error is an error in the system and it won’t tell you it’s an error you’ll have to find it. While a Syntax Error is problem in your code and the program tells you it’s an error.

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

A Logic Error changes the result while a Run-Time Error occurs when the program is running.

**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).

**Sytnax Error**

import turtle

myPen= turtle.Turtle()

myPen.speed(0)

for i in range(4):

for i in range(4):

myPen.begin\_fill()

#Comment Out

myPn.right(90)

myPen.forward(50)

myPen.left(90)

myPen.forward(50)

myPen.end\_fill()

for i in range(2):

myPen.left(90)

myPen.forward(50)

myPen.left(90)

myPen.forward(100)

myPen.left(90)

**Run-Time Error**

import turtle

myPen= turtle.Turtle()

myPen.speed(0)

for i in range(4):

for i in range(4):

myPen.begin\_fill()

myPen.right(90)

myPen.forward(50)

myPen.left(90)

myPen.forward(50)

myPen.end\_fill()

for i in range(2):

#Comment Out

myPen.left(n)

myPen.forward(50)

myPen.left(90)

myPen.forward(100)

myPen.left(90)

**Corrected Version**

import turtle

myPen= turtle.Turtle()

myPen.speed(0)

for i in range(4):

for i in range(4):

myPen.begin\_fill()

myPen.right(90)

myPen.forward(50)

myPen.left(90)

myPen.forward(50)

myPen.end\_fill()

for i in range(2):

myPen.left(90)

myPen.forward(50)

myPen.left(90)

myPen.forward(100)

myPen.left(90)

**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

**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

**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])