Metropolitan State University, Saint Paul, Minnesota

ICS 140 Computational Thinking with Programming

Lab 7

**Introduction to For Loops**

For loops are count controlled loops designed to either run a block of code a predetermined number of times or iterate through a sequence of data and execute a block of code for each item in the sequence.

A screenshot of a computer

Description automatically generated with medium confidence

On line 3, we have an example of a for loop that executes a predetermined number of times.

Text

Description automatically generated

On line 4, we have a similar 4 loop, but this time we use a target variable called number. When creating a for loop that iterates through an object, a target variable can reference the value for each loop. In this example, it would access 0,1,2,3, and 4.

Text, chat or text message

Description automatically generated

On line 11, we have an example of iterating over a list of items where the target variable name will be used in the loop to print each name in the list.

Graphical user interface, text

Description automatically generated

When using target variables to iterate through a sequence, the target variable can be given any name. Whatever is listed between the “for” and “in” keywords will become a variable that can be accessed within the loop to reference the value.

**Warm Up Coding**

1. Using a for loop and a range function, write code that will count from 1 to 10 printing out the numbers.

for x in range(10):

print(x +1)

1. Using a for loop to iterate through the following sequence of numbers and for each one print it and indicate if it is odd or even.

numbers = [8,6,7,5,3,0,9]

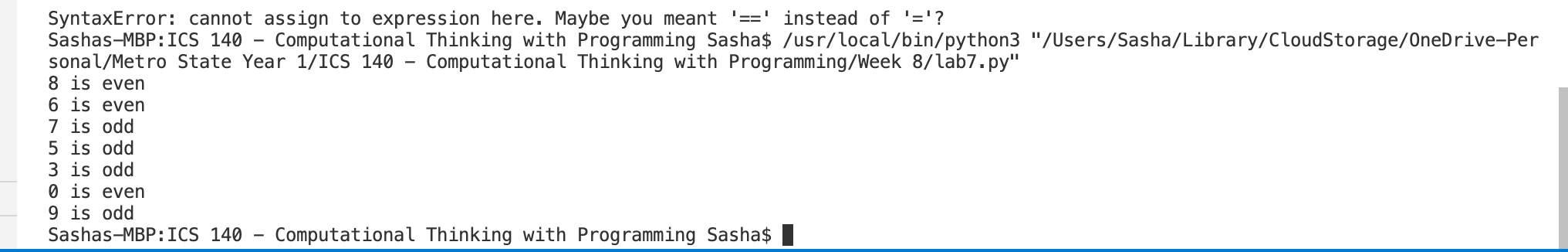
for number in [8,6,7,5,3,0,9]:

if number % 2 == 0:

print(f'{number} is even')

else:

print(f'{number} is odd')

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**Hypnotic Pattern**

Write a program that uses the turtle library to draw the following design.

A picture containing shape

Description automatically generated

Copy the python code in the section below.

**Python Code**

import turtle

al = turtle.Turtle()

x = 300

al.penup()

al.left(90)

al.forward(200)

al.right(90)

al.forward(200)

al.pendown()

for \_ in range(15):

al.right(90)

al.forward(x)

al.right(90)

al.forward(x)

x = x-20

turtle.done()

Take a screenshot of the shape and paste it below.

**Example Drawing**

Graphical user interface

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