Metropolitan State University

ICS 140 Computational Thinking with Programming

Class Exercise 6

**Lecture Section**

1. What is the function of a repetition structure?

Simpler, less redundancy

1. What is a condition-controlled loop?

While condition with Boolean

1. What is an infinite loop?

A loop that you cannot break with the code and have to break with the stopping the software or user input

EX: While True:

Print(‘infinite)

1. What is a term that represents a variable that keeps a running total in a loop?

Accumulator

1. What is an Augmented Assignment Operator?

Short hand for operators: +=, -=, <=, etc

1. What is a sentinel?

Special value that breaks a infinite loop

1. How does an input validation loop work?

Checks parameters of an input or “validates” it

**Reading while statements**

Write what the code prints

1. Code:

i = 1

while i <= 5:

    print(i)

    i += 1

Prints: 1, 2, 3,4,5

1. Code:

i = 5

while i >= 1:

    print(i)

    i = i - 1

Prints: 5,4,3,2,1

1. Code:

i = 1

j = 7

while i < j:

    print(i,j)

    i += 2

    j -= 2

print("End",i,j)

Prints:

End , 5 ,3

**Writing while loops**

Write the python code for the following situations. I have highlighted variable names in bold.

1. Start with **total** set to 0. Write a while loop that prompts the user to enter a dollar amount for each item they purchase. Add the cost of each item to **total.** Repeat the process until **total** is 100 or more. Print the **total** cost at the end.

Total = 0

While total > =100:

Money=Int(Input(‘Enter money amount: ‘))

Total += money

Print(‘your total is ${}’).format(total)

1. Start with **total** set to 0. Write a while loop that prompts the user to enter a dollar amount for each item they purchase just like the previous problem and add the cost of each item to the **total**. Repeat the process until the user enters 0 for the cost to indicate they are done. Print the **total** cost at the end.

A screen shot of a computer program

Description automatically generated

1. Create a while loop for input validation. Ask the user to enter a number between 1 and 10. If they enter a number outside of this range, repeat the loop and prompt them again. If they enter a number between 1 and 10, exit the loop and print the number.

**A screenshot of a computer program

Description automatically generated**

**Programming Exercise**

For the following exercise, you will write a simple game. The purpose will be to have the user guess a number between 1 and 10.

* The program will use the random library to generate a random number each time.
* If the user guesses high or too low, the program should tell them so.
* The program should keep track of how many guesses the user has made
* When the user guesses correctly, the program should congratulate them and tell them how many guesses they made.

It should look something like this when run:

Text

Description automatically generated

Copy the python code in the section below.

**Python Code**

A screenshot of a computer

Description automatically generated

Take a screenshot of an example run of the program and paste it below.

**Example Output**

**A screenshot of a computer

Description automatically generated**