QUEENSBOROUGH COMMUNITY COLLEGE
The City University of New York
Department of Engineering Technology

Programming Exercises – User Input and Loops

1. Request an integer input, and then print whether the number is a multiple of 10 or not.

```
Example Output 1
Enter an integer number, and I'll tell you if it's a multiple of ten: 15
15 is not multiple of ten.

Example Output 2
Enter an integer number, and I'll tell you if it's a multiple of ten: 50
50 is a multiple of ten.
```

2. For & While
a) Use a *for* loop to print all the numbers are **even** and **multiples of 3** from 1 to 1000 inclusive.
b) Convert the *for* loop to a *while* loop.

```
Example Output
6 12 18 24 30 36 42 48 54 60 66 … 996
```

3. Loop & Calculation
a) Use a *for* loop to calculate and print the **sum of all numbers** between 1 to 100 inclusive.

```
Example Output
Sum = 5050
```

b) Use a *while* loop to calculate and print the **sum of all even numbers** between 1 to 100 inclusive.

```
Example Output
Sum = 2550
```

4. Use a loop to print all the numbers are **odd** and **multiples of 5** from 1 to *n* inclusive.
a) n is a user input.
b) Implement (an *if-else)* statements to **validate** n.
Input text can be any content. Just make sure to precisely match the output format below.

```
Example Output 1                    Example Output 2
Enter a positive number: 65         Enter a positive number: 0
Range = 1 to 65                     Range = 1 to 0
5 15 25 35 45 55 65                 Invalid input.
```

5. While & For
a) Implement a *while* loop to print all the numbers from 9 to 1 inclusive.
b) Then display *Happy New Year!*
c) Convert the *while* loop to a *for* loop

```
Example Output
9
8
7
6
5
4
3
2
1
Happy New Year!
```

6. While & Lists
a) Request an integer input for the numbers of grades in the list.
b) Use a loop to generate **random** grades (1 – 100) in the list, *grades*.
c) Request a user input for the passing grade.
d) Use a loop to store all the passing grades into a new list, *passGrades*.
e) Print all the lists.

```
Example Output
Enter the number of grades in the list: 10
Enter the passing grade: 65
Updated List: [70, 81, 66, 94, 65]
Original List: [22, 17, 70, 81, 35, 33, 66, 24, 94, 65]
```

7. Sentinel While Loop
a) Implement a *while* loop to request numbers from the console and insert them into a list.
b) Insert all the numbers into a list.
c) **Stop** requesting values if the user input is a zero (*0).*
d) Print all elements of the list, sum and average.
Note that 0 should not be added to the list. Input text can be any content. Just make sure to precisely match the output format below.

```
Example Output:
Enter a number or 0 to stop: 1
Enter a number or 0 to stop: -10
Enter a number or 0 to stop: 2.34
Enter a number or 0 to stop: 56.78
Enter a number or 0 to stop: 123
Enter a number or 0 to stop: 0
```

```
Sum = 173.12
Average = 34.62
Number(s) entered:
1 -10 2.34 56.78 123
```

8. Loop and Input
a) Request two numbers, *n1* and *n2* from the console.
b) *n1* and *n2* can be any integer value.
c) Use a *while* loop to horizontally print *n1* to *n2* with increment by 1 if *n1* is smaller than *n2*.
d) Use a *for* loop to horizontally print *n1* to *n2* with decrement by 1 if *n1* is greater than *n2*.
e) Print a message, "n1 = n2" if *n1* is equal to *n2*.
Input text can be any content. Just make sure to precisely match the output format below.

Example Output 1

```
Enter a number n1: 1
Enter a number n2: 11

1 2 3 4 5 6 7 8 9 10 11
```

Example Output 2

```
Enter a number n1: 11
Enter a number n2: 1

11 10 9 8 7 6 5 4 3 2 1
```

Example Output 3

```
Enter a number n1: 10
Enter a number n2: 10

n1 = n2
```

9. Loop and Input
a) Request the lower bound, *lower* and the upper bound, *upper* from the console.
b) Request an increment value *incVal* from the console.
c) Use a *while* loop to increment from *lower* to *upper* by increments of *incVal (see example output below)*.
For example, with increment of 3, the program will output 0 3 6 9 12, given lower of 0 and upper of 12.
d) Use a *while* loop to vertically print all values in between each increment.
e) Use a *for* loop to vertically print all values in between each increment.
Input text can be any content. Just make sure to precisely match the output format below.

Example Output 1

```
USING WHILE LOOP
Enter the lower bound: 5
Enter the upper bound: 15
Enter a number to increment by: 5


5
10
15
```

Example Output 2

```
USING FOR LOOP
Enter the lower bound: 5
Enter the upper bound: 55
Enter a number to increment by: 10


5
15
25
35
45
55
```