Prelab 3

We encourage you to work together on the Pre Lab. The Pre Lab is not graded but will help you prepare for your lab session. In the Pre Lab, you may find questions to answer. We do not require you to provide us the answers, but we do recommend you to try to answer these questions. If you have any questions on the material in the pre lab, first check the book and recitation slides, if you do not find your answer please email your recitation TA or the course instructors.

If statement

A Decision is when a program has more than one choice of actions depending on a variable's value. Think of a traffic light. When it is green, we continue our drive. When we see the light turn yellow, we reduce our speed, and when it is red, we stop. These are logical decisions that depend on the value of the traffic light color. Python has a decision statement to help us when our application needs to make such decision for the user. The most common decision statement type is the ‘if’ statement.

For example:

```python
x = 10
if(x>0):
    print("The number is positive")
```

The expression (x>0) in the example above is the condition that is evaluated. If the condition is true, the print statement will be executed. Since x is in fact greater than zero, then the condition it true and the print statement is executed. The output:

```
The number is positive
```

If we input x as -10, then the condition would have been false and the print statement would have been not executed.

Nested if-else conditions

Now what if we want to do print one thing if the condition it true and print another thing if the condition is false. The solution is if-else as the following example. If we input the value of x as ‘abc’, the program prints “The value is abc”. Otherwise it prints “The value is not abc”.

Simple If-else statement

```python
def main():
    x = input("Enter a string: ")
    if(x == 'abc'):
        print("The value is", x)
```
Nested if-else

Now suppose we want to make another decision if the value is 'abc'. If the value is 'abc', the program should take another input from the user. If the value of second input is 'xyz', it prints “The value is xyz”. Otherwise it prints “The value is not xyz”. This can be done in the following way.

def main():
    x = input("Enter an string: ")
    if(x == 'abc'):
        y = input("Enter second string: ")
        if(y == 'xyz'):
            print("The value is xyz")
        else:
            print("the value is not xyz")
    else:
        print("The value is not abc and did not enter the nested if.")

main()

If we enter abc for the first input, and xyz for the second input, the output is:

Enter an string: abc
Enter second input: xyz
The value is xyz

If we enter abc for the first input, and did not enter xyz for the second input, the output is:

Enter an string: abc
Enter second input: python
the value is not xyz

If we did not enter abc the first time, the output is:

Enter an string: hello
The value is not abc and did not enter the nested if.