Intro to Python – Lesson 15

Today we want to look at input validation. This means we check each input to make sure it is valid before we continue and make the user re-enter the value if it is not valid. Check out the following videos before the start of class and we will discuss and look at examples in our class discussion.

https://www.youtube.com/watch?v=-8bDdrZhj_k (What is input validation?)
https://www.youtube.com/watch?v=jlOyXjfxEOs (Use try / except / else to validate)

Input values can be either string values or numeric values. The problem is numeric values. When they are converted to numbers with either the int() or float() functions, if the value entered is not a number, your program will crash. For each numeric input that needs to be validated I will add a loop and the try / except / else for each input. A full example of a validation is included below – in this case I input the number of hours – make sure it is a valid integer in the except – and check the range in the else. Note if there is no range check the else: will contain only the break statement.

```
while True:
    try:
        Hours = int(input("Enter the number of hours to complete the job: "))
    except:
        print("Number of hours is not a valid number - please re-enter.")
    else:
        if Hours <=1 or Hours >=20:
            print("Number of hours must be between 1 and 20 - Please re-enter.")
        else:
            break
```

For string values, the validation is a bit simpler since there is no conversion that needs to take place. I will still use a loop, but the try / except is not required – just an if statement to check for valid input. For example, if you are entering a value to see if a job is after hours (Y / N) – the user must enter a value – cannot be blank – and the value must be a Y or N.

```
while True:
    AfterHours = input("Was this job completed after hours (Y / N): "))

    if AfterHours == "":
        print("After hours cannot be blank - Please enter a Y or an N.")
    elif AfterHours,upper() != "Y" and AfterHours.upper() != "N":
        print("After hours must be a Y or an N – Please re-enter.")
    else:
        break
```

Try a few of these examples and we will discuss in class.

- Billy Bob Bike Rentals requires a program to process the bike rentals he has made for the day. Required are the customer's name (must be entered), a phone number (must be entered), a code for the type of bike rented (T for 12-Speed, M for Mountain, B for a bicycle built for 2), the number of bicycles rented (must be between 1 and 3), a credit card number, and the expiry date. Prompt the user if they want to continue with a Y/N response.

- A local Used Car Company requires a program to process used car sales. Input will include the customer's name (must be entered), the phone number (must be entered), the car year, make and model (one variable – must be entered), the car price (between $1,000.00 and $10,000.00), and a trade in allowance (cannot exceed $10,000.00). Allow the program to repeat until the user enters "END" for the Customer name.

- A local company called The Snuggly Company sells a unique product called "The Snuggly" and would like a program to help process customer orders. The program requires the user to enter the customer's name (must be entered), street address, city, province (must be valid) postal code, phone number credit card number, along with the number of Snugglys they wish to purchase (between 1 and 20), and the method of payment as Credit Card or Pay Later (must be C or P). Add a calculation and some output. Allow the program to repeat until the user enters "END" for the Customer name.

See you at 1.