Intro to Python – Lesson 9 and 10

Watch the following videos on IF Statements before our class this afternoon. The initial part of the first video looks at Jupiter Notebook where you use PyCharm as our editor. You can advance the video to 6:15 to start the section on If statements.

https://www.youtube.com/watch?v=AWek49wXGzI

Use the following exercises for some initial practise. You can enter the code in PyCharm if you would like, but I would like you to concentrate just on the logic using your IPO Charts. We will look at these in class – keep note of any issues for discussion.

1. Write programs with if statements for each of the following:

   a. Enter a person's age. If the age is 19 or over, display the message "Allowed to vote", otherwise display the message "Too young to vote".

   b. Enter an employee's hourly pay rate and hours worked. If the employee worked 40 hours or less, calculate the gross pay as the hours worked times the pay rate. If the employee worked over 40 hours (else) calculate the gross pay as regular pay plus overtime pay. Regular pay is the pay rate times 40 and overtime pay is 1.5 times the payrate for any hours over 40. NOTE: There are also companies that pay all hours the regular pay rate plus 1.5 time for hours over 40. There are also companies that only pay overtime after 45 or 50 hours.

   c. Enter an employee marital status of S, M, W, or O for Single, Married, Widowed, and Other. Based on the value entered print the literal Single, Married, Widowed or Other. Use .upper() to convert the input value to upper case – makes the processing much simpler. For example:

   ```
   Status = input("Enter the marital status (S, M, W, D): ").upper()
   ```

   d. Enter a balance due and a credit limit for a customer. If the customer is under the credit limit, calculate the payment due at 10% of the balance, otherwise, calculate the payment due as 10% of the balance + the amount they are over the credit limit.

   e. Design a program that will receive 2 integers from the keyboard, and display to the screen their Sum, Difference, Product, and Quotient. Also determine if the numbers input is even or odd – if you divide a number by 2 the resulting remainder will be either 0 or 1 – 0 is even and 1 is odd. Note that the quotient calculation can be performed only if the second integer does not equal 0. If the quotient can not be calculated, assign the message "Division by 0" to message. During output, display either the quotient or the message.

2. A local gas station does general car repairs. Input the customers name, the cost of parts, and the number of labor hours. The labor cost is based on $34.00 per hour. Calculate and display the subtotal (parts and labor), the taxes (using a rate of 15%), and the total. If the total bill is over $500.00, calculate a 10% discount. Display the discount between the taxes and the total only if it is used. Display all input and calculated values with proper headings and formats.

3. The Edsel Car Rental Company rents cars for $35.00 per day, and 10 cents per kilometer for all kilometers above 100 free per day. Allow the user to enter the number of days the car was rented, the odometer reading when the car was rented, and the odometer reading when the car was returned. Determine the total kilometers travelled – use 99999 as the highest odometer reading - keep in mind that the odometer can roll over. Also calculate the daily rental charge, the kilometer charge, and the total charges by adding the two values together. Display all input and calculated values with proper headings and formats.

4. A local shipping company sends packages brought in by their customers. The shipping cost is $1.15 per kilogram handling fee plus regional fees. Prompt the user for the weight in kilograms, and the region (entered as Local, Province, Country or Other). Calculate and display the shipping cost based on the package weight, plus $2.30 per kg for Local fees, $6.90 per kg for Province, $10.35 per kg for Country and $24.95 per kg for Other as the regional fee. Display all input and calculated values with proper headings and formats.

5. A banking machine requires that the user indicate the type of transaction they wish to make – assume the account balance has already been defined. Prompt the user to enter D or W for deposit or withdrawal, the current bank balance, and the amount of the transaction. Calculate the new account balance based on the transaction – for a deposit add the amount of the transaction to the current balance. For a withdrawal subtract the amount of the transaction from the current balance. if the amount of the withdrawal exceeds the account balance, display the message "Transaction denied: Insufficient funds", and do not update the balance. Display the type of the transaction as "Deposit" or "Withdrawal", the amount of the transaction, the updated account balance, and the message if necessary.

See you at 1.