

CSD 1133 – Assignment 06

In this assignment you will be answering the following Programming Challenges from the end of Chapter 05 of the Python textbook (pg. 281-284): **Q8, Q15, Q19, Q21**

Q8. Paint Job Estimator

A painting company has determined that for every 112 square feet of wall space, one gallon of paint and eight hours of labor will be required. The company charges \$35.00 per hour for labor. Write a program that asks the user to enter the square feet of wall space to be painted and the price of the paint per gallon. The program should display the following data:

- The number of gallons of paint required
- The hours of labor required
- The cost of the paint
- The labor charges
- The total cost of the paint job

Q15. Test Average and Grade

Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following functions in the program:

- `calc_average`. This function should accept five test scores as arguments and return the average of the scores.
- `determine_grade`. This function should accept a test score as an argument and return a letter grade for the score based on the following grading scale:

Score	Letter Grade
90–100	A
80–89	B
70–79	C
60–69	D
Below 60	F

Q19. Loan Payments Calculator

Suppose you have taken out a loan for a certain amount of money with a fixed monthly interest rate and monthly payments, and you want to determine the monthly payment amount necessary to pay off the loan within a specific number of months. The formula is as follows:

$$P = \frac{R * A}{1 - (1 + R)^{-M}}$$

The terms in the formula are:

- P is the payment amount per month.
- R is the monthly interest rate, as a decimal (e.g. 2.5% is 0.025).
- A is the amount of the loan.
- M is the number of months.

Write a program that prompts the user to enter the loan amount, monthly interest rate as a percentage and desired number of months. The program should pass these values to a function that returns

Q21. Rock, Paper, Scissors Game

Write a program that lets the user play the game of Rock, Paper, Scissors against the computer. The program should work as follows:

1. When the program begins, a random number in the range of 1 through 3 is generated. If the number is 1, then the computer has chosen rock. If the number is 2, then the computer has chosen paper. If the number is 3, then the computer has chosen scissors. (Don't display the computer's choice yet.)
2. The user enters his or her choice of "rock," "paper," or "scissors" at the keyboard.
3. The computer's choice is displayed.
4. A winner is selected according to the following rules:
 - If one player chooses rock and the other player chooses scissors, then rock wins. (Rock smashes scissors.)
 - If one player chooses scissors and the other player chooses paper, then scissors wins. (Scissors cuts paper.)
 - If one player chooses paper and the other player chooses rock, then paper wins. (Paper wraps rock.)
 - If both players make the same choice, the game must be played again to determine the winner.

Marks will be deducted from your submissions if:

- Programs are not commented
 - Programs are not well structured
 - Variable name style isn't consistent throughout the program
 - Variable names are not meaningful
 - Constants are not declared in the appropriate style and/or manner
 - Prompts are not utilized and/or not meaningful
 - Output is not annotated and/or annotated in a meaningful manner
 - Incorrect output is produced – Includes appropriate formatting
 - Decision & repetition structures are not used or used appropriately when needed
 - Procedures are not used or used appropriately when needed
-

Part 1: Program Design

*At the top of each file please include your name, G#, question being attempted, and date in a comment block.

You are to design a flowchart in Raptor for each of the above-mentioned questions. Your submission should include the following files:

- ***yourG#_Q8.rap***
- ***yourG#_Q15.rap***
- ***yourG#_Q19.rap***
- ***yourG#_Q21.rap***

IMPORTANT:

- Assignment should be submitted to the appropriate dropbox on the Program Logic (CSD1133) course website.