

Lab/Tutorial CPT113 Week 2

Topic: Struct, Enum, Class

Learning Outcomes:

- Understand and apply the use of struct and enum
 - Able to construct Object Oriented class and members
 - Describe Classes and Objects
 - Demonstrate Constructors
-

Fundamental

1. Build a struct called `Student` with the following information:

Name
ID
Desasiswa
Year
Semester
CGPA

- a) Create a struct and accept input from user so that it can print back to the terminal.
- b) Define an array `stuList` that has 5 elements. Each element representing a student info. Each element must be read from file input given and the program must be able to display data stored in each element to the terminal.
Refer final page for input file attachment.
- c) Modify question(b) above using pointer of struct.

2. Given the following program:

```
1. #include <iostream>
2. #include <iomanip>
3. using namespace std;
4.
5. enum Day { MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY };
6.
7. int main()
8. {
9.     const int NUM_DAYS = 5;    // The number of days
10.    double sales[NUM_DAYS];    // To hold sales for each day
11.    double total = 0.0;        // Accumulator
12.    Day workDay;                // Loop counter
13.
14.    // Get the sales for each day.
15.    for (workDay = MONDAY; workDay <= FRIDAY;
16.         workDay = static_cast<Day>(workDay + 1))
17.    {
18.        cout << "Enter the sales for day "
19.             << workDay << ": ";
20.        cin >> sales[workDay];
21.    }
```

```

22.
23.     cin >> sales[workDay];
24. }
25.
26. // Calculate the total sales.
27. for (workDay = MONDAY; workDay <= FRIDAY;
28.      workDay = static_cast<Day>(workDay + 1))
29.     total += sales[workDay];
30.
31. // Display the total.
32. cout << "The total sales are $" << setprecision(2)
33.      << fixed << total << endl;
34.
35. return 0;
36. }

```

The output should look something like this:

```

Enter the sales for day 0: 100
Enter the sales for day 1: 200
Enter the sales for day 2: 300
Enter the sales for day 3: 400
Enter the sales for day 4: 500
The total sales are $1500.00

```

Modify the above program so the output can display the day instead of just the enumerated number.

- Build a class object called Student with the following information:

```

name
ID
desasiswa
year
sem
CGPA

```

Write appropriate accessor and mutator and display methods/functions. Complete the main function to test all the members declared in class Student.

Applied

- Write a program that uses a structure named MovieData to store the following information about a movie:

```

Title
Director
Year Released
Running Time (in minutes)

```

The program should create two MovieData variables, store values in their members, and pass each one, in turn, to a function that displays the information about the movie in a clearly formatted manner.

- Write a program of Line class that have a constructor of Line() to assign the length of the line and return length to the class.
- Write a program, creating 3 Rectangle object named kitchen, bedroom and den. Calculate the total area of the three room. Measure, it should have a
 - class declaration
 - function to set length and width, getArea function and

c) display the total area of three room.

7. Write a program that uses a structure to store the following weather data for a particular month:

Total Rainfall
High Temperature
Low Temperature
Average Temperature

The program should have an array of 12 structures to hold weather data for an entire year. when the program runs, it should ask the user to enter data for each month. (The **average temperature** should be calculated.) Once the data are entered for all the months, the program should calculate and display the **average monthly rainfall**, the **total rainfall** for the year, the **highest** and **lowest temperatures** for the year **(and the months they occurred in)**, and the **average of all the monthly average temperatures**.

Input Validation: Only accept temperatures within the range between -100 and $+140$ degrees Fahrenheit.

8. Design a class called Date. The class should store a date in three integers: month, day, and year. There should be member functions to print the date in the following forms:

31/3/2022
March 31, 2022
31 March 2022

Demonstrate the class by writing a complete program implementing it.

Input Validation: Do not accept values for the day greater than 31 or less than 1. Do not accept values for the month greater than 12 or less than 1.

Sample input Q1(b)

Lily 11111 Restu 1 2 3.01
Jasmine 22222 Kembara 2 1 3.30
Cedar 33333 Indah 1 1 0.00
Oak 4444 FB 4 2 3.66
Rose 5555 Saujana 3 2 3.55