Instructions:

- Create a folder named SP<Reg_no>, for example: SP201-115-001.
- Store all the following codes in the above folder.

Basics:

1. Write a C program to print “Software Engineering”. Make use of ‘Comment’ in the file.
2. Write a C program to perform input & output operations of all basic data types.
3. Write a C program that will include your knowledge on constants and symbolic constants.
4. Write a C program to perform arithmetic operations.
5. Write a C program to check the differences between pre, post increment and decrement operators.
6. Write a C program that takes hours and minutes as input, and calculates the total number of minutes.
7. Write a C program that will take a sentence as an input and will print that.
8. Write a C Program to find the Size of data types
9. Write a C Program to Print ASCII Value
10. C Program to Calculate Area of Square
11. C Program to Calculate Area of Rectangle
12. C Program to convert days to years, weeks and days.
13. Write a C Program to convert Celsius value into Fahrenheit value. (Formula : F = 9C⁄5 +32;
14. Write a C Program to input any ASCII number and display appropriate characters on screen.
15. Write a C Program to input any Capital letter and transform it to a small letter.
16. Write a C Program to input any Small letter and transform it to capital letters.
17. Write a C Program to input any Capital letter and transform it to a small letter. (without using tolower() function)
18. Write a C Program to input any Small letter and transform it to capital letters. (without using toupper() function)

19. Write a C program to input the number of days from the user and convert it into years, months and days.
20. Write a C Program to input three digits numbers from the user and calculate sum of the first and last numbers. (Hint : I/p : 358 O/p :11)
21. Write a C Program to input three digits numbers from the user and display the square of first and last numbers.(Hint : I/p : 358 O/p : Square of 3 is 9 and Square of 8 is 64)
22. Write a C Program to input two digits number from user and display with reverse number on screen(Hint : I/P : 32 O/P : 23)
23. Write a C program to find out the quotient and remainder of two numbers. (Without using modulus(%) operator)

Conditional:

1. Write a C Program to check whether an integer entered by the user is odd or even
2. Write a C Program to find the largest number among three numbers.
3. Write a C Program to Find the Largest Number using Conditional Operator.
4. Write a C Program to find the Largest among Three Variables using Nested if.
5. Write a C program to check alphabets using conditional operators.
6. Write a C program to check if a number is positive, negative or zero.
7. Write a C program to check uppercase or lowercase alphabets.
8. Write a C program to check entered character vowels or consonants.
9. Write a C program to check whether a character is an alphabet, digit or special character.
10. Write a C program to accept two integers and check whether they are equal or not.
11. Write a C program to determine a candidate's age is eligible for casting the vote or not.
12. Write a C program to find out the largest between three numbers.

Loop:

1. Write a C program to print even numbers between a range of numbers, For example, from 1-10, using a for,while & do-while loop.
2. Write C program to print alphabets from a to z
3. Write C program to print ASCII values of all characters
4. Write C program to print multiplication table of a given number

5. Write a C program to print all natural numbers in reverse order
6. Write a C program to print sum of digits enter by user
7. Write C program to find sum of even numbers between 1 to n
8. Write C program to find sum of odd numbers between 1 to n
9. Write a C Program to display the following different triangles.

a.
```
*
**
***
****
```

b.
```
*****
 ****
  ***
   **
    *
```

C.
```
*****
 ****
  ***
   **
    *
```

d.
```
   *
  **
 ***
****
```

e.
```
*****
 ****
  **
   *
```

f.
```
   *
  **
 ***
****
```

e.
```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

f.
```
    1
   1 2
  1 2 3
 1 2 3 4
1 2 3 4 5
```

g.
```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
```

Switch Case:

1. Write a C Program to find the maximum number using the switch case.
2. Write C program to create calculator using switch Statement
3. Write C program to check even or odd number using switch case
4. Write C program to check vowel or consonant using switch case
5. Write a C program to to input two numbers and a choice and calculate the result according to the following conditions:

Choice	Result
1	Add
2	Subtract
3	Multiply
4	Divide
5	Remainder

Function & Recursion:

1. Write C program to check even or odd using functions
2. Write C program to find cube of a number using function
3. Write C Program To Perform All Arithmetic Operations Using Functions
4. Write a program in C to swap two numbers using a function
5. Write C program to find sum of natural numbers in given range using recursion
6. Write C program to print even or odd numbers in given range using recursion
7. Write C program to generate nth fibonacci term using recursion
8. Write C program to find factorial of a number using recursion

Array

1. Write a C program that initializes an array of integers with 5 elements and then prints each element in the array.
2. Write a C program to find the sum of all the elements in an array of integers.
3. Write a C program to find the largest and smallest elements in an array of integers.
4. Write a C program to find the second largest element in an array of integers.
5. Write a C program to find the frequency of a given element in an array of integers.
6. Write a C program to search for an element in an array of integers using linear search.
7. Write a C program to reverse an array of integers.
8. Write a C program to remove duplicates from an array of integers.
9. Write a C program to rotate an array of integers by a given number of positions.
10. Write a program that takes an input from the user for the size of a 2D array and then asks the user to enter values for each element. The program should then display the elements in the array. For example, if the user inputs a size of 3x3 and enters values of 1, 2, 3, 4, 5, 6, 7, 8, 9, the program should output:
    1 2 3
    4 5 6

11. Write a program that takes two 2D arrays as inputs from the user and then multiplies them together. The program should then display the resulting matrix. For example, if the user inputs two 2x2 matrices:
    2 4
    6 8 &

    1 3
    5 7
    the program should output:
    22 34
    54 82
12. Write a program that takes a 2D array as input from the user and then finds the largest element in the array. The program should then display the largest element and its position in the array. For example, if the user inputs a 3x3 array:
    3 5 7
    1 9 4
    8 2 6
    the program should output:
    The largest element in the array is 9 at position (1,2)

13. Write a program that takes a 2D array as input from the user and then transposes it. The program should then display the transposed array. For example, if the user inputs a 3x2 array:
    1 2
    3 4
    5 6
    the program should output:
    1 3 5
    2 4 6

14. Write a program that takes a 2D array as input from the user and then calculates the sum of the elements in each row. The program should then display the sums. For example, if the user inputs a 3x3 array:
    2 4 6

8 10 12
14 16 18
the program should output:
The sum of row 1 is 12
The sum of row 2 is 30
The sum of row 3 is 48

String

1. Write a program that checks whether two strings are equal or not.
2. Write a program that checks the length of a given string.
3. Write a program that takes a string input from the user and then displays the string in reverse order. For example, if the user inputs "hello", the program should output "olleh".
4. Write a program that takes two string inputs from the user and then concatenates them together. For example, if the user inputs "hello" and "world", the program should output "helloworld".
5. Write a program that takes a string input from the user and then checks if it is a palindrome (i.e., reads the same forwards and backwards). For example, if the user inputs "racecar", the program should output "Yes, it is a palindrome", but if the user inputs "hello", the program should output "No, it is not a palindrome".
6. Write a program that takes a string input from the user and then counts the number of vowels in the string. For example, if the user inputs "hello", the program should output "There are 2 vowels in the string".
7. Write a program that takes a string input from the user and then replaces all occurrences of a certain character with another character. For example, if the user inputs "hello" and wants to replace all occurrences of "l" with "z", the program should output "hezzo".

Pointers

1. Write a program that uses a pointer to swap the values of two variables. For example, if the variables are a = 10 and b = 20, the program should output a = 20 and b = 10.

2. Write a program that uses a pointer to find the largest element in an array of integers. For example, if the array is {3, 5, 1, 7, 9}, the program should output "The largest element in the array is 9".
3. Write a program that uses a pointer to count the number of occurrences of a certain character in a string. For example, if the string is "hello world" and the character is "l", the program should output "The character 'l' appears 3 times in the string".
4. Write a program that uses a pointer to reverse a string. For example, if the string is "hello", the program should output "olleh".
5. Write a program that uses a pointer to find the length of a string. For example, if the string is "hello", the program should output "The length of the string is 5".

Structure

1. Define a structure named "Rectangle" that contains the following fields: length (float), width (float), and area (float). Write a program that prompts the user to enter the length and width of a rectangle, computes its area, and stores the length, width, and area values in a Rectangle structure. Finally, the program should display the details of the rectangle on the screen.
2. Define a structure named "Employee" that contains the following fields: name (string), age (integer), salary (float), and designation (string). Write a program that prompts the user to enter the details of n employees, creates an array of n Employee structures, and then displays the details of each employee on the screen.
3. Define a structure named "Book" that contains the following fields: title (string), author (string), price (float), and publication year (integer). Write a program that prompts the user to enter the details of n books, creates an array of n Book structures, and then displays the details of each book on the screen.
4. Define a structure named "Point" that contains the following fields: x-coordinate (integer) and y-coordinate (integer). Write a program that prompts the user to enter the coordinates of two points, creates two Point structures, computes the distance between the two points, and then displays the distance on the screen.