Institute of Computer Technology

B. Tech. Computer Science and Engineering

Sub: DS

Course Code: 2CSE302

Practical – 1

Name: Jaymin Gondaliya

Enrollment No: 23162171007

Sem - 3

Branch: CS

Class: A

Batch: 32

Problem Definition-1:

In a company an employee is paid as under: Along with the basic salary, the employee would be given dearness allowance of 40% of his basic salary and house rent allowance of 20% of his basic salary. If the basic salary of an employee is received as input, write a program to find his/her gross salary.

Code:

```c
#include <stdio.h>

int main()
{

    printf("Enter basic salary: ");
    float basic;
    scanf("%f", &basic);
    float d = 0.4 * basic;
    float r = 0.2 * basic;
    float gross = basic + d + r;
    printf("Gross salary: %f\n", gross);
    return 0;
}
```

Output-

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  SERIAL MONITOR  COMMENTS

PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-1\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output> & .\'q1.exe'
Enter basic salary: 1203
Gross salary: 1924.799927
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output>
```

Problem Definition-2:

The distance between two cities (in km.) would be given by the user. Write a program to convert and print this distance in: 1. Feet. 2. Meters. 3. Inches. 4. Centimeters.

Code:

```c
#include <stdio.h>

int main()
{

    printf("Enter Distence: ");
    float distence;
    scanf("%f", &distence);

    float feet = distence * 3280.84;
    float meters = distence * 1000;
    float inches = distence * 39370.1;
    float centimeters = distence * 100000;
    printf("Distence in Feet: %f\n", feet);
    printf("Distence in Meters: %f\n", meters);
    printf("Distence in Inches: %f\n", inches);
    printf("Distence in Centimeters: %f\n", centimeters);
    return 0;

}
```

Output -

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  SERIAL MONITOR  COMMENTS

PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-1\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output> & .\'q2.exe'
Enter Distence: 50
Distence in Feet: 164042.000000
Distence in Meters: 50000.000000
Distence in Inches: 1968505.000000
Distence in Centimeters: 5000000.000000
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output>
```

Problem Definition-3:

A student enters his/her marks of 5 subjects in a program. Assume that the maximum marks that can be obtained by a student in each subject to be 100. Write a program to calculate the aggregate marks of the student. Also, calculate the percentage marks obtained by the student.

Code:

```c
#include<stdio.h>

int main() {

    int a,b,c,d,e;
    printf("Enter 5 numbers: ");
    scanf("%d %d %d %d %d",&a,&b,&c,&d,&e);
    int sum = a+b+c+d+e;
    float percentage = ((float)sum/500)*100;
    printf("Sum: %d\n", sum);
    printf("Percentage: %f\n", percentage);
    return 0;
}
```

Output –

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  SERIAL MONITOR  COMMENTS

PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-1\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output> & .\'q3.exe'
Enter 5 numbers: 60 76 88 68 90
Sum: 382
Percentage: 76.400002
PS C:\ICT\SEM-3\DS\Practical\Practical-1\output>
```

Problem Definition-4:

The user will enter a four-digit number. Write a program that calculates the sum of its digits. (Hint: Use the modulus operator '%').

Code:

```c
#include<stdio.h>

int main() {

    int num;
    printf("Enter a four-digit number: ");
    scanf("%d", &num);
    int sum = 0;
    sum += num % 10;
    num /= 10;
    sum += num % 10;
    num /= 10;
    sum += num % 10;
    num /= 10;
    sum += num % 10;

    printf("Sum of digits: %d\n", sum);
    return 0;


}
```

Output –

Problem Definition-5: Suppose a five-digit number is input by a user. Write a program to print a new number by subtracting one to each of its digits. For example if the number that is input is 12391 then the output should be displayed as 01280.

Code:

```c
#include <stdio.h>
int main() {
    char num[6];
    printf("Enter five digit number: ");
    scanf("%s", num);
    printf("Output: ");
    for (int i = 0; i < 5; i++) {
        char dd = (num[i] == '0') ? '9' : num[i] - 1;
        printf("%c", dd);
    }
    printf("\n");
    return 0;
}
```

Output –