

Institute of Computer Technology  
B. Tech. Computer Science and Engineering  
Sub: DS  
Course Code: 2CSE302

Practical – 1

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Sem - 3  
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**Problem Definition-1:**

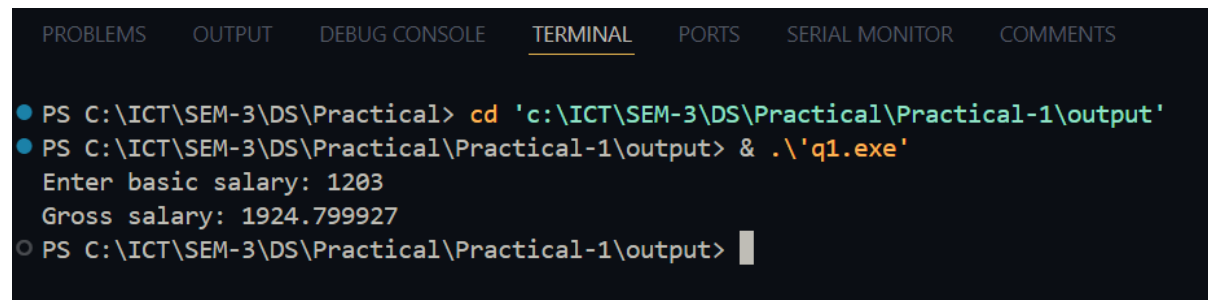
In a company an employee is paid as under: Along with the basic salary, the employee would be given dearness allowance of 40% of his basic salary and house rent allowance of 20% of his basic salary. If the basic salary of an employee is received as input, write a program to find his/her gross salary.

**Code:**

```
#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:

```
#include <stdio.h>

int main()
{
    printf("Enter Distance: ");
    float distance;
    scanf("%f", &distance);

    float feet = distance * 3280.84;
    float meters = distance * 1000;
    float inches = distance * 39370.1;
    float centimeters = distance * 100000;
    printf("Distance in Feet: %f\n", feet);
    printf("Distance in Meters: %f\n", meters);
    printf("Distance in Inches: %f\n", inches);
    printf("Distance 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 Distance: 50
Distance in Feet: 164042.000000
Distance in Meters: 50000.000000
Distance in Inches: 1968505.000000
Distance 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:

```
#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:**

```
#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;
}
```

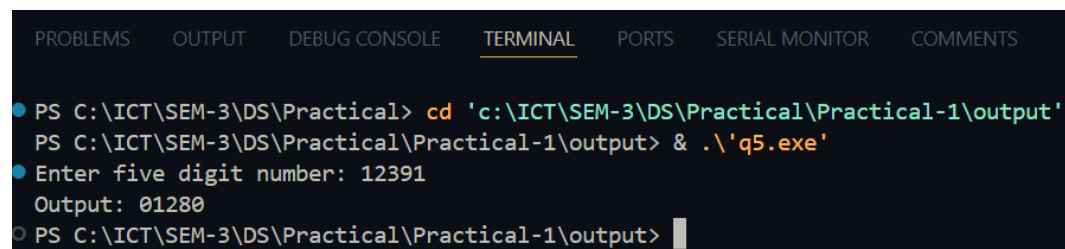
**Output –**

```
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> & .\q4.exe
Enter a four-digit number: 1234
Sum of digits: 10
PS C:\ICT\SEM-3\DS\Practical\Practical-1\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:**

```
#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 –**

```
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> & .\'q5.exe'
• Enter five digit number: 12391
  Output: 01280
○ PS C:\ICT\SEM-3\DS\Practical\Practical-1\output> 
```