Institute of Computer Technology
B. Tech. Computer Science and Engineering
Sub: DS Branch: BDA Class: A

Name: Jatin Patel
Enrolment No.: 23162121029
Sem: 3
Class: A
Subject: DS
Practical: 01
Date: 31/07/24

Practical: 01

1. Gross Salary Problem 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.

Input:

Take basic Salary as input Output:
Output the gross salary. Example

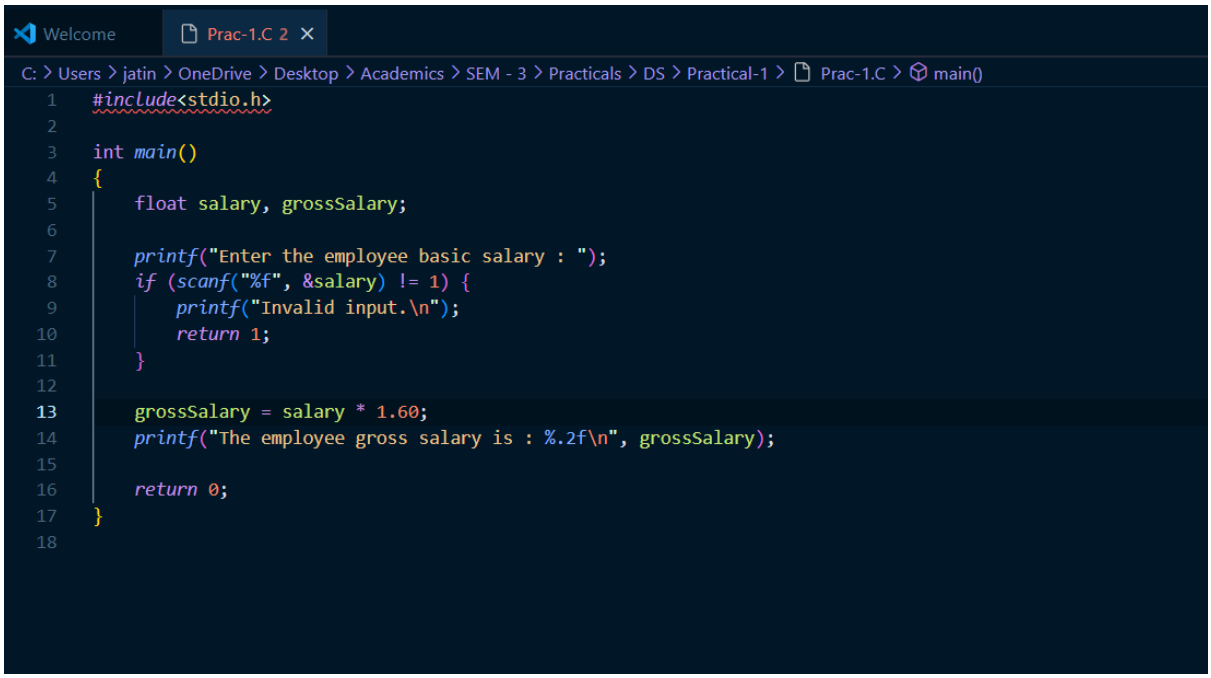
Input:

1203

Output:

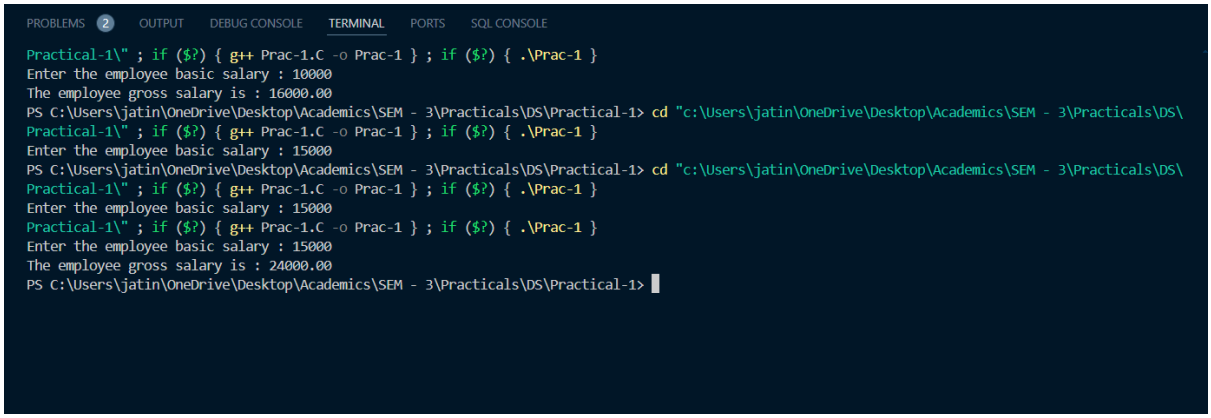
1924.800049

Input:



```c
#include<stdio.h>

int main()
{
    float salary, grossSalary;

    printf("Enter the employee basic salary : ");
    if (scanf("%f", &salary) != 1) {
        printf("Invalid input.\n");
        return 1;
    }

    grossSalary = salary * 1.60;
    printf("The employee gross salary is : %.2f\n", grossSalary);

    return 0;
}
```

Output:



```
Practical-1\" ; if ($?) { g++ Prac-1.C -o Prac-1 } ; if ($?) { .\Prac-1 }
Enter the employee basic salary : 10000
The employee gross salary is : 16000.00
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1> cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\
Practical-1\" ; if ($?) { g++ Prac-1.C -o Prac-1 } ; if ($?) { .\Prac-1 }
Enter the employee basic salary : 15000
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1> cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\
Practical-1\" ; if ($?) { g++ Prac-1.C -o Prac-1 } ; if ($?) { .\Prac-1 }
Enter the employee basic salary : 15000
Practical-1\" ; if ($?) { g++ Prac-1.C -o Prac-1 } ; if ($?) { .\Prac-1 }
Enter the employee basic salary : 15000
The employee gross salary is : 24000.00
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1>
```

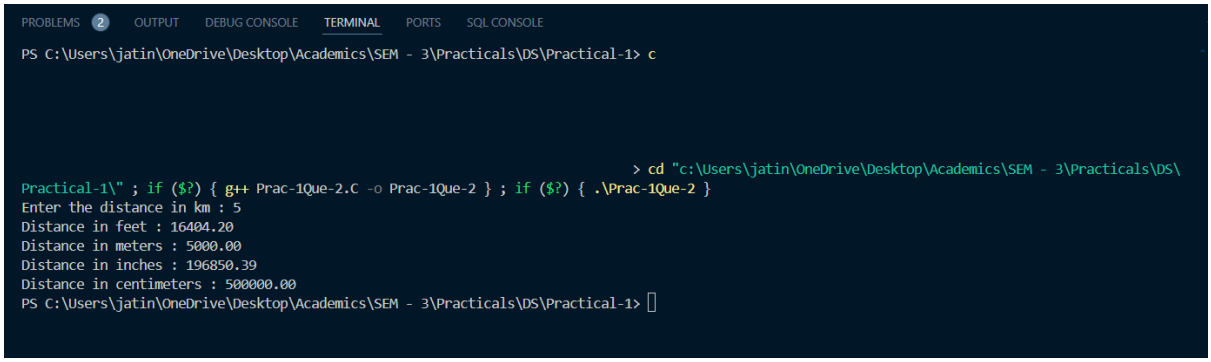
2. Conversion Problem The distance between two cities (in km.) would be given by the user. Write a program to convert and print this distance in:
1. Feet.
2. Meters.
3. Inches.
4. Centimeters.

Input:
The input for the code would contain the distance between two cities in kilometers.
Output: The
distance in each of the mentioned units.
Example:
Input: 50
Output:

Feet: 164042.000000
Meters: 50000.000000
Inches: 1968505.000000
Centimeters: 500000.000000

Input:

Output:



3. Marks Calculator 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.
Input:
Marks of 5 Subjects separated by spaces. Output:
Aggregate Marks on the first line. Percentage on the second line.
Example:
Input:
60 76 88 68 90
Output:
Total: 382
Percentage: 76.400002

Input:

```c
#include<stdio.h>

int main() {
    int marks[5], grossmarks = 0;
    float percentage;
    int i;

    printf("Enter student's marks for the 5 subjects: ");

    for(i = 0; i < 5; i++) {
        scanf("%d", &marks[i]);
        grossmarks += marks[i];
    }

    percentage = ((float)grossmarks / 500) * 100;

    printf("Gross marks of the student are: %d\n", grossmarks);
    printf("The percentage of the student is: %.2f\n", percentage);

    return 0;
}
```

Output:

```
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1>

> cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\
Practical-1\" ; if ($?) { gcc Prac-1Que-3.c -o Prac-1Que-3 } ; if ($?) { .\Prac-1Que-3 }
Enter student's marks for the 5 subjects: 55 50 85 72 64
Gross marks of the student are: 326
The percentage of the student is: 65.20
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1>
```

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

Input:

Four-digit number.

Output:

Sum of the four digits.

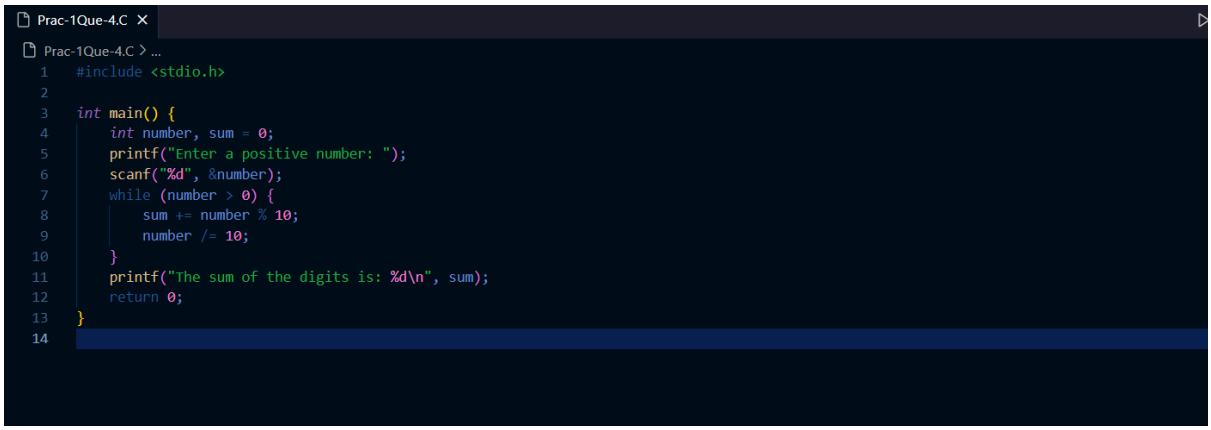
Example

Input: 1234

Output:

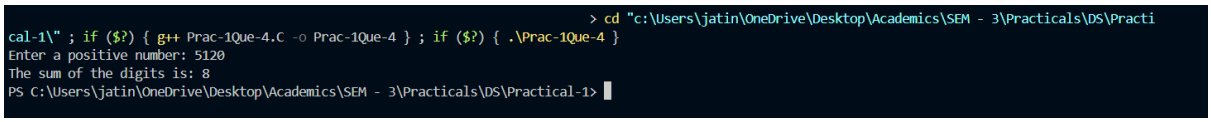
10

Input:



```c
#include <stdio.h>

int main() {
    int number, sum = 0;
    printf("Enter a positive number: ");
    scanf("%d", &number);
    while (number > 0) {
        sum += number % 10;
        number /= 10;
    }
    printf("The sum of the digits is: %d\n", sum);
    return 0;
}
```

Output:



```
> cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1\" ; if ($?) { g++ Prac-1Que-4.C -o Prac-1Que-4 } ; if ($?) { .\Prac-1Que-4 }
Enter a positive number: 5120
The sum of the digits is: 8
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1>
```

5. Decrementing Digit Problem 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.

Input:

Five-digit Number. (12391) Output:

Number with each entry of digit decremented by 1. 1 -> 0

2 -> 1

3 -> 2

9 -> 8

1 -> 0

Example:

Input: 12391

Output: 01280

Input:

Prac-1Que-5.C > main()

```c
#include <stdio.h>

int main() {
    int fiveDigitNo, sum = 0;
    int fnumber[5];
    printf("Enter any 5-digit number: ");
    scanf("%d", &fiveDigitNo);
    for (int i = 4; i >= 0; i--) {
        fnumber[i] = (fiveDigitNo % 10) - 1;
        if (fnumber[i] < 0) {
            fnumber[i] = 9;
        }
        fiveDigitNo /= 10;
    }
    printf("Number with each digit decremented by 1 is: ");
    for (int i = 0; i < 5; i++) {
        printf("%d", fnumber[i]);
    }

    return 0;
}

```

Output:

```
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1> cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1\" ; i
f ($?) { g++ Prac-1Que-5.C -o Prac-1Que-5 } ; if ($?) { .\Prac-1Que-5 }
Enter any 5-digit number: 12589
Number with each digit decremented by 1 is: 01478
PS C:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-1>
```