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221IT085

CS111 Lab Assignment 1

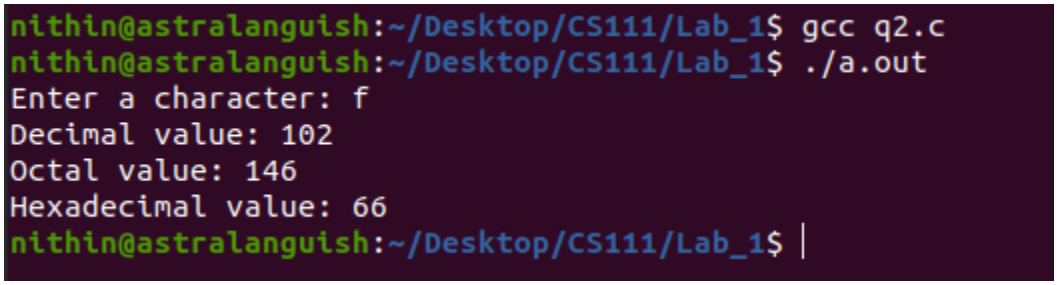
Q1) Write a program to swap two numbers without using third variables.

```
#include <stdio.h>

int main()
{
    float a, b;
    printf("Enter the value of a: ");
    scanf("%f", &a);
    printf("Enter the value of b: ");
    scanf("%f", &b);
    printf("Before swapping:\n");
    printf("a = %.2f, b = %.2f\n", a, b);
    a = a + b;
    b = a - b;
    a = a - b;
    printf("After swapping:\n");
    printf("a = %.2f, b = %.2f\n", a, b);
    return 0;
}
```

```
nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q1.c
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter the value of a: 234
Enter the value of b: 67
Before swapping:
a = 234.00, b = 67.00
After swapping:
a = 67.00, b = 234.00
nithin@astralanguish:~/Desktop/CS111/Lab_1$
```

Q2) Write a program to read a character, and print its decimal, octal and hexadecimal equivalent.

```
#include <stdio.h>

int main()
{
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("Decimal value: %d\nOctal value: %o\
nHexadecimal value: %x\n", c, c, c);
    return 0;
}
```



Q3) Write a program to find the third angle of a triangle if two angles are given.

```c
#include <stdio.h>

int main()
{
    float A, B, C;
    printf("Enter the first angle A: ");
    scanf("%f", &A);
    printf("Enter the second angle B: ");
    scanf("%f", &B);
    C = 180 - (A + B);
    if (C >= 0)
    {
        printf("Third angle C = %.2f\n", C);
    }
    else
    {
        printf("Invalid input.\n");
    }
    return 0;
}
```

```
nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q3.c
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter the first angle A: 86
Enter the second angle B: 32
Third angle C = 62.00
```

Q4) Write a program to find the square root of a given number with and without using sqrt function

Without sqrt Function

```
#include <stdio.h>

int main() {
    double number, result;
    double guess, epsilon = 0.00001;

    printf("Enter a number: ");
    scanf("%lf", &number);

    if (number >= 0) {
        guess = number / 2.0;

        while ((guess * guess - number) >= epsilon) {
            guess = 0.5 * (guess + number / guess);
        }

        printf("Square root of %.2lf is approximately
%.5lf\n", number, guess);
    } else {
        printf("Invalid input. The number must be non-
negative.\n");
    }

    return 0;
}
```

```
nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q4.c
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter a number: 43
Square root of 43.00 is approximately 6.55744
nithin@astralanguish:~/Desktop/CS111/Lab_1$
```

With Square Root Function

```
#include <stdio.h>
#include <math.h>

int main()
{
    double number, result;

    printf("Enter a number: ");
    scanf("%lf", &number);

    if (number >= 0)
    {
        result = sqrt(number);
        printf("Square root of %.2lf is %.5lf\n", number,
result);
    }
    else
    {
        printf("Invalid input. The number must be non-
negative.\n");
    }

    return 0;
}
```

```
nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q4_.c -lm
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter a number: 45
Square root of 45.00 is 6.70820
nithin@astralanguish:~/Desktop/CS111/Lab_1$
```

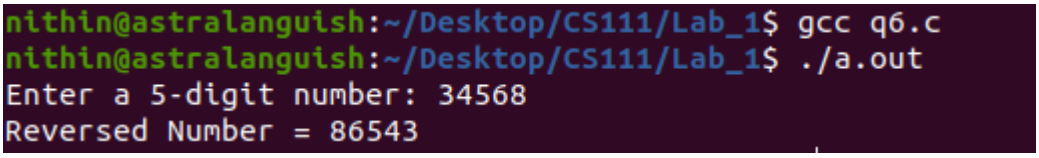
Q5) Write a program to read two sides of a triangle and one angle in degree and find the area of the scalene triangle.

```
#include <stdio.h>
#include <math.h>
#define PI 3.142

int main()
{
    double side1, side2, angle_degrees;
    double area;

    printf("Enter the length of side 'a': ");
    scanf("%lf", &side1);

    printf("Enter the length of side 'b': ");
    scanf("%lf", &side2);

    printf("Enter the angle 'C' in degrees: ");
    scanf("%lf", &angle_degrees);

    double angle_radians = angle_degrees * PI / 180.0;

    area = (0.5) * side1 * side2 * sin(angle_radians);

    printf("Area of the scalene triangle = %.2lf square
units\n", area);

    return 0;
}
```

```
nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q5.c -lm
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter the length of side 'a': 5
Enter the length of side 'b': 4
Enter the angle 'C' in degrees: 70
Area of the scalene triangle = 9.40 square units
```

Q6) Write a C program to read 5 digit numbers and print in reverse order.

```
#include <stdio.h>

int main()
{
    int n;
    int last = 0;
    int rev = 0;
    printf("Enter a 5-digit number: ");
    scanf("%d", &n);
    {
        last = n % 10;
        rev = rev * 10 + last;
        n = n / 10;
    }

    {
        last = n % 10;
        rev = rev * 10 + last;
        n = n / 10;
    }

    {
        last = n % 10;
        rev = rev * 10 + last;
        n = n / 10;
    }
    {
        last = n % 10;
        rev = rev * 10 + last;
        n = n / 10;
    }
    {
        last = n % 10;
        rev = rev * 10 + last;
        n = n / 10;
    }
    printf("Reversed Number = %d", rev);
    return 0;
}
```


nithin@astralanguish:~/Desktop/CS111/Lab_1$ gcc q6.c
nithin@astralanguish:~/Desktop/CS111/Lab_1$ ./a.out
Enter a 5-digit number: 34568
Reversed Number = 86543