Assignment 1: Introduction to Programming

Garvit Shah
F24
U21CS089

1. Write a program to read the input and print the output as mentioned below.

    1.1. Input: 25

    Output: 25

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

int main()
{
    int a;
    printf("->");
    scanf("%d", &a);
    printf("%d", a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
->25
25
```

    1.2. Input: 5.3267

    Output: 5.3267

```c
#include <stdio.h>
int main()
{
    float a;
    printf("->");
    scanf("%f", &a);
```

```
    printf("%0.4f", a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
->5.3267
5.3267
```

1.3. Input: 5.3267

Output: 5.33

```
#include <stdio.h>
int main()
{
    float a;
    printf("->");
    scanf("%f", &a);
    printf("%0.2f", a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
->5.3267
5.33
```

1.4. Input: 5664.57567456

Output: 5664.57

```
#include <stdio.h>
int main()
{
    float a;
    printf("->");
    scanf("%f", &a);
    printf("%0.2f", a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
->5664.57567456
5664.58
```

1.5. Input: 35345364

Output: 35345364 * 35345364

```c
#include <stdio.h>
int main()
{
    int a;
    int sq;
    printf("->");
    scanf("%d", &a);
    sq = a*a;
    printf("%d", sq);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
->35345364
439035792
```

1.6. Input & Output: Your name

```c
#include <stdio.h>
int main()
{
    char a[10];
    printf("->");
    scanf("%s", &a);
    printf("%s", a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Assign1.c:8:14: warning: format specifies type 'char *' but the argument has ty
pe 'char (*)[10]' [-Wformat]
        scanf("%s", &a);
              ~~   ^~
1 warning generated.
->Garvit
Garvit
garvitshah@Garvits-MacBook-Air ~/D/C/C>
```

1.7. Input & Output: S. V. National Institute of Technology, Surat

```c
#include <stdio.h>
int main()
{
    char a[1000];
    printf("->");
    gets(a);
    puts(a);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
warning: this program uses gets(), which is unsafe.
->S. V. National Institute of Technology, Surat
S. V. National Institute of Technology, Surat
```

2. Write a program to compute the area of a circle.

```c
#include <stdio.h>
int main()
{
    int r;
    float area;
    printf("Enter Radius\n->");
    scanf("%d", &r);
    area = 3.14*r*r;
    printf("Area of circle =%f", area);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Enter Radius
->10
Area of circle =314.000000
```

3. Write a program to calculate the simple interest.

```c
#include <stdio.h>
int main()
{
    int p, t, r;
    float si;
    printf("Enter Principle: \n->");
    scanf("%d", &p);
    printf("Enter Time: \n->");
    scanf("%d", &t);
    printf("Enter Rate of Interest: \n->");
    scanf("%d", &r);
    si = (p*t*r)/100;
    printf("Simple Interest =%f", si);
}
```

```
garvitshah@Garvits-MacBook-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/
" && gcc Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Enter Principle:
->1000
Enter Time:
->10
Enter Rate of Interest:
->5
Simple Interest =500.000000⏎
```

4. Write a program that converts Fahrenheit to Celsius.

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

int main()
{
    float temp,f;
    printf("Temperature in Fahrenheit - ");
    scanf("%f", &temp);
    f = (temp - 32)*(5/9);
    printf("Temperature in Celsius = %f", f);
}
```

```
garvitshah@Garvits-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/" && gcc
 Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Temperature in Farhenheit - 32
Temperature in Farhenheit = 0.000000⏎
```

5. Write a program to solve the following equations. Read the values of a, b, and c from the keyboard when required.

5.1. $a^2 + 2ab + b^2$

5.2. $a^2 - 2ab + b^2$

5.3. $a^3 + b^3 + c^3 - 3abc$

```c
#include <stdio.h>
#include <math.h>
int main()
{
    int a, b, c, out;
    printf("Enter 2 numbers\n->");
    scanf("%d %d", &a, &b);
    out = pow(a,2) + 2*a*b + pow(b,2);
    printf("a^2 + 2ab + b^2 = %d", out);
}
```

```
garvitshah@Garvits-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/" && gcc
 Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Enter 2 numbers
->2
3
a^2 + 2ab + b^2 = 25⏎
```

```c
#include <stdio.h>
#include <math.h>
int main()
{
    int a, b, c, out;
    printf("Enter 2 numbers\n->");
    scanf("%d %d", &a, &b);
    out = pow(a,2) - 2*a*b + pow(b,2);
    printf("a^2 - 2ab + b^2 = %d", out);
}
```

```
garvitshah@Garvits-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/" && gcc
 Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Enter 2 numbers
->4
1
a^2 - 2ab + b^2 = 9⏎
```

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

int main()
{
    int a, b, c, out;
    printf("Enter 3 numbers\n->");
    scanf("%d %d %d", &a, &b, &c);
    out = pow(a,3) + pow(b,3) + pow(c,3) - 3*a*b*c;
    printf("a^3 + b^3 + c^3 - 3abc = %d", out);
}
```

```
garvitshah@Garvits-Air ~/D/C/C> cd "/Users/garvitshah/Desktop/Coding/C/" && gcc
 Assign1.c -o Assign1 && "/Users/garvitshah/Desktop/Coding/C/"Assign1
Enter 3 numbers
->5
-2
-3
a^3 + b^3 + c^3 - 3abc = 0
```