VARIABLES
AND
DATA TYPES

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(1) AIM:-

To practice declaring and initializing variables of different data types in C.

CODE:-

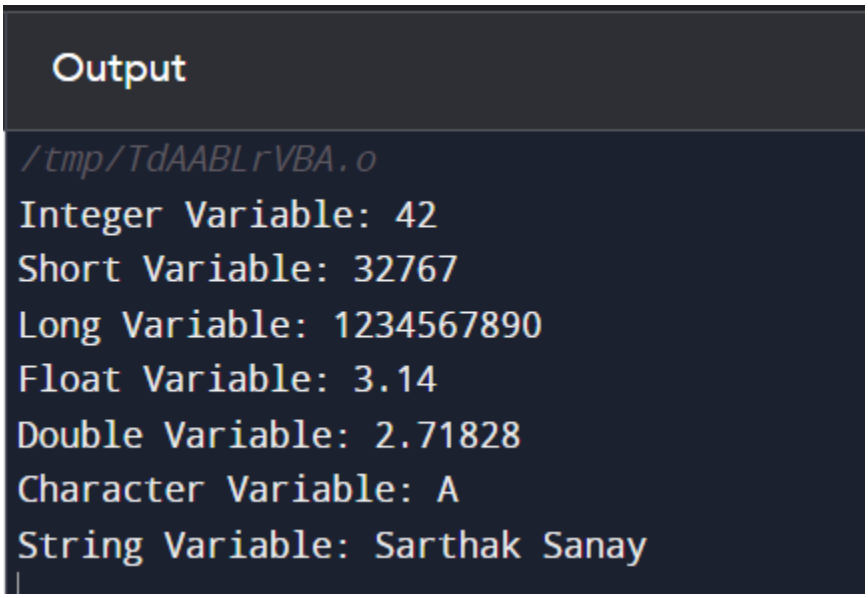
```c
#include <stdio.h>
int main()
{
    // Integer variables
    int i = 42;
    short shortI = 32767; // Short integer
    long longI = 1234567890L; // Long integer

    // Floating-point variables
    float f = 3.14f;
    double d = 2.71828; // Double-precision floating-point

    // Character variables
    char c = 'A';

    // String variables
    char str[100] = "Sarthak Sanay";
    // Printing the values
    printf("Integer Variable: %d\n", i);
    printf("Short Variable: %d\n", shortI);
    printf("Long Variable: %ld\n", longI);
    printf("Float Variable: %.2f\n", f);
    printf("Double Variable: %.5f\n", d);
    printf("Character Variable: %c\n", c);
    printf("String Variable: %s\n", str);
    return 0;
}
```

OUTPUT SCREEN:-



P.T.O.

(2) AIM:-

To implement a program in C to perform Arithmetic operations (addition, subtraction, multiplication, division, etc.) on variables.

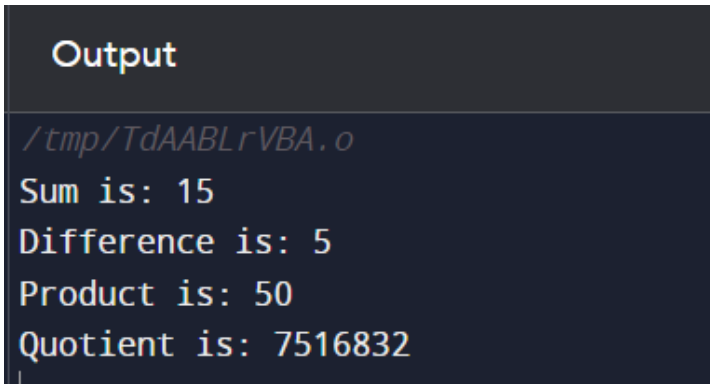
CODE:-

```c
#include <stdio.h>
int main()
{
    int a=10, b=5, sum, diff, prod;
    float quotient;

    // Performing the Arithmetic operations
    sum= a+b; // Addition
    diff= a-b; // Subtraction
    prod= a*b; // Multiplication
    quotient= (float)a/b; // Division

    // Printing the results
    printf("Sum is: %d\n", sum);
    printf("Difference is: %d\n", diff);
    printf("Product is: %d\n", prod);
    printf("Quotient is: %d\n", quotient);
    return 0;
}
```

OUTPUT SCREEN:-



(3) AIM:-

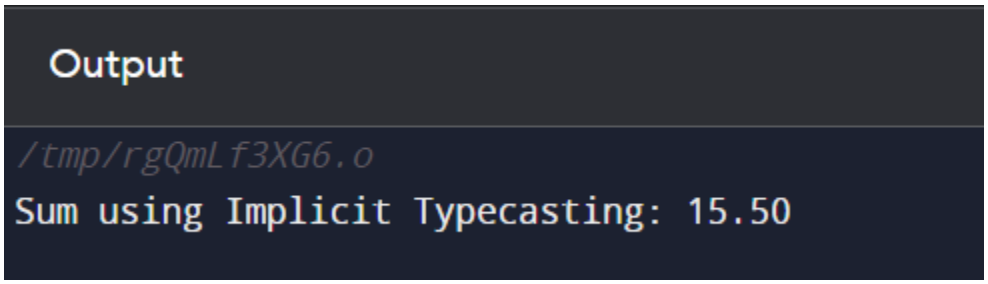
To experiment with typecasting in C.

1. Implicit typecasting
2. Explicit typecasting
3. Typecasting with different data types
4. Typecasting with arithmetic operators

CODE 1:- (Implicit Typecasting)

```c
// Program in C to demonstrate Implicit Typecasting (Widening Conversion)
#include <stdio.h>
int main()
{    int a= 10;
     float b= 5.5;
     // Implicit typecasting (widening conversion)
     float res= a+b;
     printf("Sum using Implicit Typecasting: %.2f\n", res);
     return 0;
}
```

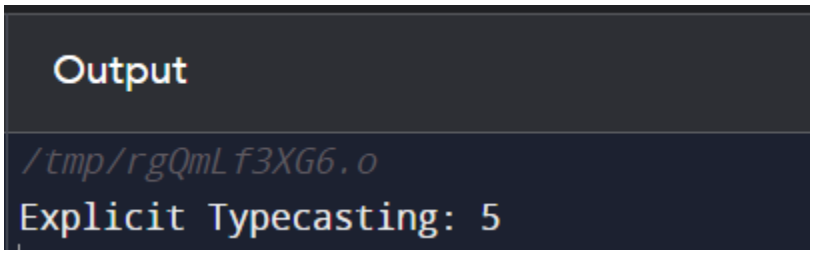
OUTPUT SCREEN 1:-



CODE 2:- (Explicit Typecasting)

```c
// Program in C to demonstrate explicit typecasting (narrowing conversion)
#include <stdio.h>
int main()
{
    int a;
    float b = 5.5;
    // Explicit typecasting (narrowing conversion)
    a = (int)b;
    printf("Explicit Typecasting: %d\n", a);
    return 0;
}
```

OUTPUT SCREEN 2:-

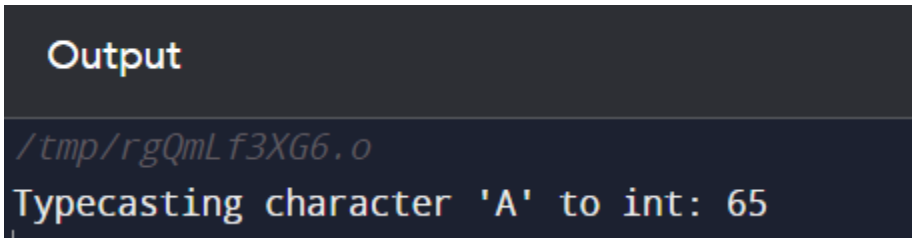


P.T.O.

CODE 3:- (Typecasting between different data types)

```c
// Program in C to Explicit typecasting between different data types
#include <stdio.h>
int main()
{
    char c= 'A';
    int n;
    // Explicit typecasting from char to int
    n = (int)c;
    printf("Typecasting character '%c' to int: %d\n",c, n);
    return 0;
}
```

OUTPUT SCREEN 3:-

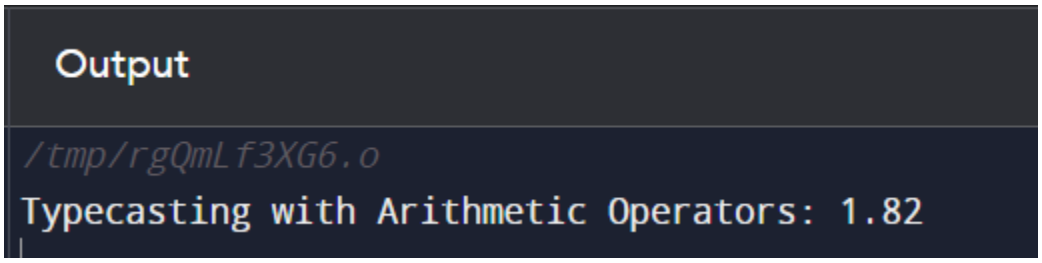


P.T.O.

CODE 4:- (Typecasting with arithmetic operators)

```c
// Program in C to demonstrate typecasting with arithmetic operators
#include <stdio.h>
int main()
{
    int a = 10;
    float b = 5.5;
    // Typecasting with arithmetic operators
    float res = (float)a/b;
    printf("Typecasting with Arithmetic Operators: %.2f\n", res);
    return 0;
}
```

OUTPUT SCREEN 4:-



P.T.O.

(4) AIM:-

To write a program in C to convert temperature from Fahrenheit to Celsius and vice versa.

CODE:-

```
// To write a program in C to convert temperature from Fahrenheit to Celsius
     and vice versa.
#include <stdio.h>
int main()
{
    int ch;
    float c, f;
    printf("Enter 1 to input temperature in Celsius\nEnter 2 to input
     temperature in Fahrenheit\n");
    scanf("%d", &ch);
    if(ch==1)
    {
        printf("Enter temp in Celsius: ");
        scanf("%f", &c);
        f = (c * 1.8) + 32;
        printf("%.2f C is equal to %.2f F", c, f);
    }
    else if(ch==2)
    {
        printf("Enter temp in Fahrenheit: ");
        scanf("%f", &f);
        c = (f-32) * 0.56;
        printf("%.2f F is equal to %.2f C", f, c);
    }
    else
        printf("Enter correct input for choice.");
    return 0;
```

OUTPUT SCREEN:-

```
Output

/tmp/JcRp1icqzx.o
Enter 1 to input temperature in Celsius
Enter 2 to input temperature in Fahrenheit
1
Enter temp in Celsius: 28
28.00 C is equal to 82.40 F
```

```
Output

/tmp/JcRp1icqzx.o
Enter 1 to input temperature in Celsius
Enter 2 to input temperature in Fahrenheit
2
Enter temp in Fahrenheit: 110
110.00 F is equal to 43.68 C
```

```
Output

/tmp/JcRp1icqzx.o
Enter 1 to input temperature in Celsius
Enter 2 to input temperature in Fahrenheit
3
Enter correct input for choice.
```