Experiment :- 02

1 Demonstrate the use of following operators by a separate program for each:

a) Arithmetic Operators: +, -, \*, /, %, ++, --

#include <stdio.h>

int main() {

   int a = 21;

   int b = 10;

   int c ;

   c = a + b;

   printf("1 - Value of c is %d\n", c );

   c = a - b;

   printf("2 - Value of c is %d\n", c );

   c = a \* b;

   printf("3 - Value of c is %d\n", c );

   c = a / b;

   printf("4 - Value of c is %d\n", c );

   c = a % b;

   printf("5 - Value of c is %d\n", c );

   c = a++;

   printf("6 - Value of c is %d\n", c );

   c = a--;

   printf("7 - Value of c is %d\n", c );

    return 0;

}

**Answer.**

1 - Value of c is 31

2 - Value of c is 11

3 - Value of c is 210

4 - Value of c is 2

5 - Value of c is 1

6 - Value of c is 21

7 - Value of c is 22

b) Relational Operators: ==, !=, <, >, <=, >=

# include <stdio.h>

int main() {

   int a = 21;

   int b = 10;

   int c ;

   if( a == b ) {

      printf("1 - a is equal to b\n" );

   } else {

      printf("1 - a is not equal to b\n" );

   }

   if ( a < b ) {

      printf("2 - a is less than b\n" );

   } else {

      printf("2 - a is not less than b\n" );

   }

   if ( a > b ) {

      printf("3 - a is greater than b\n" );

   } else {

      printf("3- a is not greater than b\n" );

   }

   a = 5;

   b = 20;

   if ( a <= b ) {

      printf("4 - a is either less than or equal to  b\n" );

   }

   if ( b >= a ) {

      printf("5 - b is either greater than  or equal to b\n" );

   }

     Return 0;

}

Answer.

1 - a is not equal to b

2 - a is not less than b

3 - a is greater than b

4 - a is either less than or equal to  b

5 - b is either greater than  or equal to b

c) Logical operators: &&, ||, !

#include <stdio.h>

int main() {

   int a = 5;

   int b = 20;

   int c ;

   if ( a && b ) {

      printf("1 - Condition is true\n" );

   }

   if ( a || b ) {

      printf("2 - Condition is true\n" );

   }

   a = 0;

   b = 10;

   if ( a && b ) {

      printf("3 - Condition is true\n" );

   } else {

      printf("3 - Condition is not true\n" );

   }

   if ( !(a && b) ) {

      printf("4 - Condition is true\n" );

   }

    return 0;

}

Answer.

Line 1 - Condition is true

Line 2 - Condition is true

Line 3 - Condition is not true

Line 4 - Condition is true

d) Conditional operator: <expr1>?<expr2>:<expr3>

#include <stdio.h>

**int** main()

{

**int** m = 5, n = 4;

    (m > n) ? **printf**("m is greater”, n) : **printf**("n is greater”, m);

**return** 0;

}

Answer.

m is greater

e) Shorthand assignment: +=, -=, \*=, /=, %/

#include <stdio.h>

int main()

{

int a = 10;

printf("Value of a is %d\n", a);

a += 10;

printf("Value of a is %d\n", a);

a -= 10;

printf("Value of a is %d\n", a);

a \*= 10;

printf("Value of a is %d\n", a);

a /= 10;

printf("Value of a is %d\n", a);

return 0;

}

Answer.

Value of a is 10

Value of a is 20

Value of a is 10

Value of a is 100

Value of a is 10

f) Bitwiseoperator:&,|,^,<<,>>,~

1.

#include <stdio.h>

int main() {

    int a = 12, b = 25;

    printf("Output = %d", a & b)

;

    return 0;

}

Answer.

Output = 8

2.

#include <stdio.h>

int main() {

    int a = 12, b = 25;

    printf("Output = %d", a | b);

    return 0;

}

Answer.

Output = 29

3.

#include <stdio.h>

int main() {

    int a = 12, b = 25;

    printf("Output = %d", a ^ b);

    return 0;

}

Answer.

Output = 21

4.

#include <stdio.h>

int main() {

    int num=212, i;

    for (i = 0; i <= 2; ++i) {

        printf("R.S. by %d: %d\n", i, num >> i);

    }

    printf("\n");

    for (i = 0; i <= 2; ++i) {

        printf("L.S. by %d: %d\n", i, num << i);

    }

    return 0;

}

Answer.

R.S. by 0: 212

R.S. by 1: 106

R.S by 2: 53

L.S by 0: 212

L.S. by 1: 424

L.S. by 2: 848

5.

#include <stdio.h>

int main() {

    printf("Output = %d\n", ~35);

    printf("Output = %d\n", ~-12);

    return 0;

}

Answer.

Output = -36

Output = 11

g) Increment-Decrement operator:

++a; a++; --a; a--;

* 1

#include*<stdio.h>*

int main()

{

    int x = 12, y = 1;

    printf("Initial value of x = %d**\n**", x);

    printf("Initial value of y = %d**\n\n**", y);

    y = ++x;

    printf("After incrementing by 1: x = %d**\n**", x);

    printf("y = %d**\n\n**", y);

    y = --x;

    printf("After decrementing by 1: x = %d**\n**", x);

    printf("y = %d**\n\n**", y);

**return** 0;

}

Answer.

Initial value of x = 12

Initial value of y = 1

After incrementing by 1: x = 13

y = 13

After decrementing by 1: x = 12

y = 12

* 2

#include*<stdio.h>*

int main()

{

    int x = 12, y = 1;

    printf("Initial value of x = %d**\n**", x);

    printf("Initial value of y = %d**\n\n**", y

    y = x++;

    printf("After incrementing by 1: x = %d**\n**", x);

    printf("y = %d**\n\n**", y);

    y = x--;

    printf("After decrementing by 1: x = %d**\n**", x);

    printf("y = %d**\n\n**", y);

**return** 0;

}

Answer.

Initial value of x = 12

Initial value of y = 1

After incrementing by 1: x = 13

y = 12

After decrementing by 1: x = 12

y = 13

1. 2  Write a program to swap (interchange) values of two variables with or without using a third variable.

* With third variable

#include <stdio.h>

**int** main()

{

**int** x, y;

**printf**("Enter Value of x ");

**scanf**("%d", &x);

**printf**("\nEnter Value of y ");

**scanf**("%d", &y);

**int** temp = x;

    x = y;

    y = temp;

**printf**("\nAfter Swapping: x = %d, y = %d", x, y);

**return** 0;

}

Answer.

14, y = 12

Enter Value of x 12

Enter Value of y 14

After Swapping: x = 14, y = 12

* Without third variable

#include <stdio.h>

**int** main()

{

**int** a, y;

**printf**("Enter the two numric values : \n");

**scanf**("%d %d", &x, &y);

**printf**("Before swapping X is : %d and Y is %d \n", x,y);

    x = x + y;

    y = x - y;

    x = x - y;

**printf**("After swapping X is : %d and Y is : %d \n", x,y);

**return** 0;

}

Answer.

Enter the two numbers : 15

17

Before swapping X is : 15 and Y is 17

After swapping X is : 17 and Y is : 15

3  Write a program to display sum of total two variables taken input from

keyboard and display its result like

The sum of integer variables A and B is: answer

The sum of float variables C and D is: answer

The sum of character variables X and Y is: answer

* Integer

#include <stdio.h>

int main() {

    int n1, n2, sum;

    printf("Enter two integers: ");

    scanf("%d %d", &n1, &n2);

    sum = n1 + n2;

    printf("%d + %d = %d", n1, n2, sum);

return 0;

}

Answer.

Enter two integers: 12

     11

     12 + 11 = 23

* Float

#include <stdio.h>

float main() {

    float n1, n2, sum;

    printf("Enter two integers: ");

    scanf("%f %f", &n1, &n2);

    sum = n1 + n2;

    printf("%f + %f = %f", n1, n2, sum);

    return 0;

}

Answer.

Enter two integers: 2.2

2.3

2.200000 + 2.300000 = 4.500000

4  Write a Program to convert the Celsius to Fahrenheit. F=(C\*t)+T (declare and use t=1.8 as const variable and T=32 as #define directive)

#include <stdio.h>

**float** celsius\_to\_fahrenheit(**float** N)

{

**return** ((N \* 9.0 / 5.0) + 32.0);

}

**int** main()

{

**float** N = 20.0;

**printf**("Temperature in Fahrenheit : %0.2f",

           celsius\_to\_fahrenheit(N));

**return** 0;

}

Answer.

Temperature in Fahrenheit : 68.00

6 Type and run some sample programs given below and justify their output:

(a)  
#include<stdio.h>

int main()

{

printf("The color: %s\n", "blue");

printf("First number: %d\n", 12345);

printf("Second number: %04d\n", 25);

printf("Third number: %i\n", 1234);

printf("Float number: %3.2f\n", 3.14159);

printf("Hexadecimal: %x\n", 255);

printf("Octal: %o\n", 255);

printf("Unsigned value: %u\n", 150);

printf("Just print the percentage sign %%\n", 10);

return 0;

}

Answer.

The color: blue

First number: 12345

Second number: 0025

Third number: 1234

Float number: 3.14

Hexadecimal: ff

Octal: 377

Unsigned value: 150

Just print the percentage sign %

(b)  
#include<stdio.h>

int main()

{

printf(":%s:\n", "Hello, world!");

printf(":%15s:\n", "Hello, world!");

printf(":%.10s:\n", "Hello, world!");

printf(":%-10s:\n", "Hello, world!");

printf(":%-15s:\n", "Hello, world!");

printf(":%.15s:\n", "Hello, world!");

printf(":%15.10s:\n", "Hello, world!");

printf(":%-15.10s:\n", "Hello, world!");

return 0;

}

Answer.

:Hello, world!:

: Hello, world!:

:Hello, wor:

:Hello, world!:

:Hello, world! :

:Hello, world!:

: Hello, wor:

:Hello, wor :

(c)

7 Calculate the volume of following shapes in a single program:

V=πr2h V=43πr3 V= L \* W \* H

* 1

#include<stdio.h>

void main()

{

float vol,r,h;

printf("enter radius: ");

scanf("%f",&r);

printf("enter height: ");

scanf("%f",&h);

vol=(22\*r\*r\*h)/7;

printf("VOC: %f\n",vol);

}

Answer.

enter radius: 7

enter height: 7

VOC: 1078.000000

* 2

#include<stdio.h>

Int main ()  
{  
float pi=3.14;  
int r;  
  
printf("Enter an integer: ");  
scanf("%d",r);  
volume = 4.0f/3.0f \* pi \* r \* r \* r;  
  
printf("Volume (cubic units): %f\n", volume);  
  
return 0;  
}

* 3

#include<stdio.h>

Int main ()

{  
  
int l,w,h;  
  
printf("Enter 3 integer: ");  
scanf("%d %d %d",l,w,h);  
v = l\*w\*h;  
  
printf("v: &d\n",v);  
  
return 0;  
}