Lab Assignment - 2

Data-types and Operators

1. Write a program to find the greatest of three numbers using conditional operators.

Ans 1.

```c
#include<stdio.h>
int main(){
    int a,b,c;
    int big;

    printf("Enter any three numbers: ");
    scanf("%d %d %d",&a,&b,&c);

    if(a>b && a>c)
      big = a;
    else if(b>c)
      big = b;
    else
      big = c;

    printf("Largest number is: %d",big);

    return 0;
}
```

2. Write a program that reads a floating-point number then displays the right-most digit of the integral part of the number.

Ans 2.

```c
#include<stdio.h>

int main()

{

   float num;

   printf("Enter a number:\n");

   scanf("%f",&num);



   int rightmost = (int)num % 10;



   printf("\n Right most digit of integral part of number %f = %d",num,
   rightmost);

}
```

3. Evaluate the expressions using precedence table: -

i) 64%8+12*3+8

ii) 56/8+14*2+6

iii) (45+5)*(6+7)

iv) (45==44)&&(3==3)

v) (45==45)&(3==3)|2

vi) 3*4+2%3*(3&4)+16|4*12+25&&(3||4)

Ans 3.

i) 44

ii) 41

iii) 650

iv) 0

v) 3

vi) 3*4+2%3*(3&4)+16|4*12+25&&(3||4)

= 3*4+2%3*0+16|4*12+25&&(3||4)

= 12+2%3*0+16|4*12+25&&1

= 12+2*0+16|4*12+25&&1

= 12+0+16|4*12+25&&1

= 12+0+16|48+25&&1

= 12+16|48+25&&1

= 28|48+25&&1

= 28|73&&1

= 93&&1

= 1

PRECEDENCE TABLE

	Operator	Associativity	Precedence
()	Function call	Left-to-Right	Highest 14
[]	Array subscript		
.	Dot (Member of structure)		
->	Arrow (Member of structure)		
!	Logical NOT	Right-to-Left	13
~	One's-complement		
-	Unary minus (Negation)		
++	Increment		
--	Decrement		
&	Address-of		
*	Indirection		
(type)	Cast		
sizeof	Sizeof		
*	Multiplication	Left-to-Right	12
/	Division		
%	Modulus (Remainder)		
+	Addition	Left-to-Right	11
-	Subtraction		
<<	Left-shift	Left-to-Right	10
>>	Right-shift		
<	Less than	Left-to-Right	8
<=	Less than or equal to		
>	Greater than		
>=	Greater than or equal to		
==	Equal to	Left-to-Right	8
!=	Not equal to		
&	Bitwise AND	Left-to-Right	7
^	Bitwise XOR	Left-to-Right	6
|	Bitwise OR	Left-to-Right	5
&&	Logical AND	Left-to-Right	4
||	Logical OR	Left-to-Right	3
? :	Conditional	Right-to-Left	2
=, +=	Assignment operators	Right-to-Left	1
*=, etc.			
,	Comma	Left-to-Right	Lowest 0

4. Write a program that will obtain the length and width of a rectangle and compute its area and perimeter.

Ans 4.

```c
#include<stdio.h>

int main()

{

   float length, width;

   printf("Enter width and length of a rectangle:\n" );

   scanf("%f %f",&length, &width);


   float area = length*width;

   float perimeter = 2*(length + width);


   printf("\nArea = %f \nPerimeter = %f",area, perimeter);

}
```

5. Write a program to read a four-digit number and print the sum of its digits.

Ans 5.

```c
#include <stdio.h>

int main()

{

      int n,f,x,s,y,t,l,sum;

      printf("Enter 4-Digit Number: ");

      scanf("%d",&n);

      f=n/1000;

      x=n%1000;

      s=x/100;

      y=x%100;
```

```
      t=y/10;

      l=y%10;

      printf("\nFirst Digit  = %d \nSecond Digit = %d \nThird Digit  =
   %d\nLast Digit   = %d\n",f,s,t,l);

      sum=f+s+t+l;

      printf("\nSum of All 4-Digits : %d",sum);

      return 0;

}
```

6. Write a program to print the size of various data types in C.

Ans 6.

```
#include<stdio.h>

int main() {

    int intType;

    float floatType;

    double doubleType;

    char charType;


    // sizeof evaluates the size of a variable

    printf("Size of int: %zu bytes\n", sizeof(intType));

    printf("Size of float: %zu bytes\n", sizeof(floatType));

    printf("Size of double: %zu bytes\n", sizeof(doubleType));

    printf("Size of char: %zu byte\n", sizeof(charType));


    return 0;

}
```

7. Write a program to read a real number, round it off to the nearest integer and print out the result in integer form.

Ans 7.

```c
#include<stdio.h>

int main()

{

    float realnum;

    printf("Enter a real number:\n" );

    scanf("%f", &realnum);


    int RoundOffInteger = round(realnum);


    printf("\nround of %f = %d",realnum, RoundOffInteger);

}
```

8. Write a program that prints 10.33344 in exponential correct up to 2,4, and 8 decimal places.

Ans 8.

```c
#include<stdio.h>

int main()

{

    float Num=10.33344;

    printf("exponential format with correct to two decimal places:--
   %.2e\n",Num);

    printf("exponential format with correct to four decimal places:--
   %.4e\n",Num);

    printf("exponential format with correct to eight decimal places:--
   %.8e\n",Num);

}
```

9. Write a program to find the ASCII values of all digits in the given 4-digit number.

Ans 9.

```c
#include<stdio.h>

int main()

{

    int num;

    printf("Enter a four digit number:\n");

    scanf("%d",&num);


    int remain, digit;

    remain = num % 1000;

    digit = num/1000;

    num = remain;

    printf("ASCII of %d = %d\n", digit, 48+digit);


    remain = num % 100;

    digit = num/100;

    num = remain;

    printf("ASCII of %d = %d\n",digit, 48+digit);


    remain = num % 10;

    digit = num/10;

    num = remain;

    printf("ASCII of %d = %d\n",digit, 48+digit);


    digit = num;

    printf("ASCII of %d = %d\n", digit, (48+digit));

}
```

10. Write a program to find the square root of a number and print if corrected to three decimal places.

Ans 10.

```c
#include <math.h>

#include <stdio.h>


int main()

{

    int N = 12;

    printf("%.3f ", sqrt(N));

    return 0;

}
```