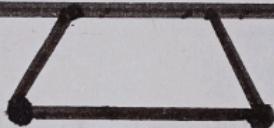


C-Programming
For Problem
Solving :- CSA0271



Assignment - 1

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Good

Assignment 1:-

Decision making and control statements. Write the syntax for all decision making statements and write the coding for the following programs.

(a)

IF statement

Program to display a number if it is negative.

Sol:

Syntax :-

If the condition is true then statement 1 is executed.
If the condition is false no statements are executed.

if(condition)
True - Statement ①
False - _____

Coding:-

// To display a number if it is negative.

#include<stdio.h>

int main()

{

 int n;

 scanf("%d", &n);

 if(n<0)

 {

 printf("%d is a negative number");

 }

}

(b) IF else statement

Program to check whether an integer is odd or even

Sol: Syntax :-

If the condition is true then statement 1 is executed, if the condition is false statement 2 is executed.

ifelse (condition)

True - statement ①

False - statement ②

Coding :-

// To check whether an integer is odd or even

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

```
int main()
```

```
{
```

```
    int n;
```

```
    scanf("%d", &n);
```

```
    if (n % 2 == 1)
```

```
        printf("%d is an odd", n);
```

```
    else
```

```
        printf("%d is an even", n);
```

3

(C) If --- else ladder statement

Program to relate two integers using =, > or <

Sol:-

The if-else statement having another if and else-if statements then it is known as If---else ladder

if (condition ①)

- statement ①

else

→ if (condition ②)

- statement ②

else

- statement ③

Condition ①

condition ②

result

T

F

F

statement ①

statement ②

statement ③

Coding:-

```
// To relate two integers using =,> or <  
#include <stdio.h>  
int main()  
{  
    int a,b;  
    scanf("%d %d", &a, &b);  
    if(a==b)  
        printf("a and b are equal");  
    else if (a>b)  
        printf("a is greater than b");  
    else  
        printf("b is greater than a");  
}
```

(d) For loop

Program to print numbers from 1 to 10

Syntax:-

For initialises an internal variable , executes the body as long as the internal variable is not more than limit and at the end of each iteration , increments the internal variable.

```
for(initialization, condition, increment/decrement)  
{  
    statements  
}
```

Coding:-

```
// To print numbers from 1 to 10  
#include <stdio.h>  
int main()  
{  
    int i;
```

```
for(i=1; i<=10; i++)  
{  
    printf("%d\n", i);  
}
```

3

Program to calculate the sum of first n natural numbers
Coding:-

```
// To calculate the sum of first n natural numbers
```

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

```
int main()
```

{

```
    int n, sum;
```

```
    scanf("%d", &n);
```

```
    for(int i=1; i<=n; i++)
```

{

```
        sum = (n*(n+1))/2;
```

}

```
    printf("%d", sum);
```

4

Program to find factorial of a number.
Coding:-

```
// To find factorial of a number.
```

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

```
int main()
```

{

```
    int n, i, fact = 1;
```

```
    scanf("%d", &n);
```

```
    for(i=1; i<=n; i++)
```

{

```
        fact = fact * i;
```


coding:-

//to print inverted right half pyramid

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

```
int main()
```

```
{
```

```
    int r, c;
```

```
    for(r=1; r<=5; r++)
```

```
{
```

```
    for(c=5; c>=r; c--)
```

```
        printf("*");
```

```
    printf("\n");
```

```
}
```

```
}
```

coding:-

// to print left half pyramid

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

```
int main()
```

```
{
```

```
    int r, c, space;
```

```
    for(r=5; r>=1; r--)
```

```
{
```

```
    for(space=1; space<=r; space++)
```

```
        printf(" ");
```

```
    for(c=5; c>=r; c--)
```

```
        printf("*");
```

```
    printf("\n");
```

```
}
```

```
}
```

* * * *

* * *

* *

*

*

* *

* * *

* * * *

* * * * *

Coding:-

```
#include <stdio.h>
// to print inverted left half pyramid
int main()
{
    int r, c, space;
    for(r=1; r<=5; r++)
    {
        for(space=1; space<=r; space++)
            printf(" ");
        for(c=5; c>=space+1; c--)
            printf("*");
        printf("\n");
    }
}
```

3

Coding:-

```
// to print inverted full pyramid
#include <stdio.h>
int main()
{
    int r, c, space;
    for(r=1; r<=5; r++)
    {
        for(space=1; space<=r; space++)
            printf(" ");
        for(c=5; c>=r; c--)
            printf("*");
        printf("\n");
    }
}
```

3

```
*****  
****  
***  
**  
*
```

```
*****  
****  
***  
**  
*
```

Coding:-

```
// to print floyd triangle
#include <stdio.h>
int main()
{
    int r, c, n;
    n = 1;
    for(r = 1; r <= 5; r++)
    {
        for(c = 1; c <= r; c++)
            printf("%d", n++);
        printf("\n");
    }
}
```

Coding:-

```
// to print pascal triangle
#include <stdio.h>
int main()
{
    int n, i, j;
    scanf("%d", &n);
    for(i = 0; i < n; i++)
    {
        for(j = 1; j <= (n - i); j++)
        {
            printf(" ");
        }
        int c = 1;
        for(j = 0; j <= i; j++)
        {
            if (j == 0 || i == 0)
```

```
c=1;  
else  
c=c*(i-j+1)/j;  
printf("%.4d", c);  
}  
printf("\n");  
}
```

3

(e) Break statement

Sol:- Program to calculate the sum of numbers (10 numbers max)

Syntax :- To stop the program execution and to come out of loop.

break;

3

Aim :- To calculate the sum of numbers using break statement

Coding :-

```
#include<stdio.h>  
int main()  
{  
    int i,n,sum=0,count=0;  
    scanf("%d", &n);  
    for(i=1; i<=n; i++)  
    {  
        count = count + i;  
        sum = count;  
    }  
    if(i>n)  
    {  
        printf("%d", sum);  
        break;  
    }  
}
```

```
3  
3  
printf(".1.d", sum);
```

3
(f) Switch statement
Program to calculate simple calculator

Syntax:-

Switch can be used for more than one options

```
switch(expression)
```

```
{
```

```
    case value1: //code to be executed
```

```
        break; //optional
```

```
    default:
```

x Coding:-

```
//to calculate simple calculator
#include<stdio.h>
#include<conio.h>
int main()
{
    char operator;
    double(float) n1, n2;
    printf("enter two operands");
    scanf("//f//f", &n1, &n2);
    float result=0;
    scanf("//.c", operator);
    printf("Enter an operator (*, +, -, /): ");
    switch(operator)
    {
        case '+':
            result = n1 + n2;
    }
```

program to create a simple calculator

```
#include<stdio.h>

int main()
{
    char operation;
    double n1, n2;

    printf("Enter an operator (+, -, *, /): ");
    scanf("%c", &operation);
    printf("Enter two operands: ");
    scanf("%lf %lf", &n1, &n2);

    switch(operation)
    {
        case '+':
            printf("%lf + %lf = %lf", n1, n2, n1+n2);
            break;
        case '-':
            printf("%lf - %lf = %lf", n1, n2, n1-n2);
            break;
        case '*':
            printf("%lf * %lf = %lf", n1, n2, n1*n2);
            break;
        case '/':
            printf("%lf / %lf = %lf", n1, n2, n1/n2);
            break;
        default:
            printf("error, the given operator is invalid");
    }
}
```

(g)

While loop

program to print numbers from 1 to 5

Syntax:-

```
start
while (condition)
{
    statements
    update
}
```

Coding:-

// To print numbers from 1 to 5

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

```
int main()
```

```
{
```

```
    int n=1;
    while(n<=5)
    {
        printf("%d\n", n);
        n++;
    }
}
```

(h)

Solv

Do while loop

Syntax:-

```
start
do {
    statements
    update
} while (condition);
```

Coding:-

// Program to add numbers until the user enters zero

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

```
int main()
```

```
{
```

```
    int n=1, s=0;
```

```
    do {
```

```
        s=s+n;
```

```
        n++;
    }
```

```
    while (n<=10);
```

```
    printf("sum=%d", s);
```

```
}
```