Control Statement in C Language

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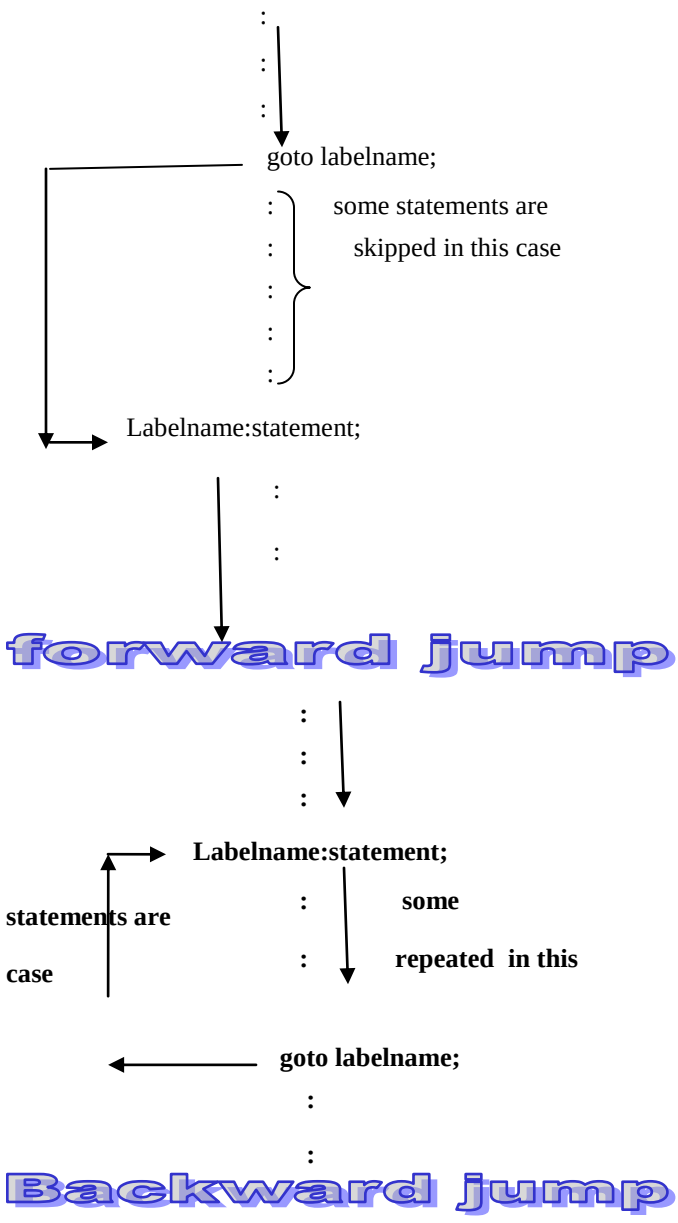
Abstract: *Control statement is the building block of any computer language. Control statement is used to alter the normal sequence of execution of program. Computer execute program sequentially if there is no any control statement is used in the program but with the helf of control statement we are able to alter the normal sequence of execution of program as per as our requirement.*

Keyword: *alter, heart, normal, control.*

INTRODUCTION

Control statement is the heart of any computer language. Computer execute program sequentially if there is no any control statement is used in the program. But our requirement we can change its normal sequence of execution of program. Depending upon computer language there are several types of control statement is used in the program. Control statement in C languge is divided into the following parts:-

1 **Unconditional control statement:** Unconditional control statement is used to execute a statement without checking any condition.goto is the best example of unconditional control statement which is used to transfer control of a program from one place to another place. Sometimes goto statement is also known as jump statement and there are two types of jump namely forward jump and backward jump.In the case of forward jump some statements are skipped but in the case of backward jump some statements are repeated. Syntax of goto statement:-



Program 1:Write a C program to find the sum of first n natural numbers by using goto statement.

```
main()
{
```

```
int n,i,s;
clrscr();
printf("\n Enter number of terms");
scanf("%d",&n);
s=0;
i=1;
abc:s=s+i;
i=i+1;
if(i<=n)
goto abc;
printf("\nsum=%d",s);
getch();
}
```

OR

```
main()
{
int n,i,s;
clrscr();
printf("\n Enter number of terms");
scanf("%d",&n);
i=1;
s=0;
abc:if(i<=n)
{
s=s+I;
i=i+1;
goto abc;
}
printf("\n sum=%d",s);
getch();
}
```

OR

```
main()
{
int  n,i,s;
clrscr();
printf("\n Enter number of terms");
scanf("%d",&n);
i=1;
s=0;
xyz:if(i>n)
goto abc;
s=s+i;
i=i+1;
goto xyz;
abc:printf("\n sum=%d",s);
getch();
}
```

Program 2:Write a C program to find the factorial of a given number by using goto statement.

```
main()
{

int n,p,i;
prin tf("\n Enter given number greater than zero");
```

```
scanf("%d",&n);
p=1;
i=1;
abc:p=p*I;
i=i+1;
if(i<=n)
goto abc;
printf("\n Factorial=%d",p);
}
```

Program 3:Write a C program to print prime numbers lie between 1 and 100 by using goto statement.

```
main()
{
int p,i,j,prime;
clrscr();
i=2;
if(i<=100)
{
prime=1;
j=2;
if(j<=i-1)
{
p=i%j;
if(p==0)
prime=0;
j++;
}
if(prime!=0)
printf("\t%d",i);
i++;
}
getch();
}
```

Program 4:Write a C program to print fibonacci series by using goto statement.

```
main()
{
int a,b,c,I,n;
clrscr();
a=0;
b=1;
printf("\n Enter number of terms ");
scanf("%d",&n);
if(n==1)
printf("\t%d",a);
else if(n==2)
{
printf("\t%d",a);
printf("\t%d",b);
}
else
{
printf("\t%d",a);
printf("\t%d",b);
```

```
i=3;
abc:c=a+b;
printf("\t%d",c);
a=b;
b=c;
i=i+1;
if(i<=n)
goto abc;
}
getch();
}
```

Program 5:Write a C program to print Armstrong numbers lie between 1 and 500 by using goto statement.

```
main()
{
int i,s,r,n,m;
clrscr();
i=1;
if(i<=500)
{
s=0;
m=I;
if(m!=0)
{
r=m%10;
s=s+r*r*r;
m=m/10;
}
if(s==i)
printf("\n%d",i);
i++;
}
getch();


}
```

Program 6:Write a C program to find the largest of two numbers by using goto and null statement.

Null statement:

Null statement is used to indicate that nothing is to be performed and its syntax is only ' ;'.

```
main()
{
int a,b;
clrscr();
printf("\n Enter two numbers");
scanf("%d%d",&a,&b);
if(a>b)
{
printf("\n large=%d",a);
goto abc;
}
printf("\n large=%d",b);
abc:;
getch();
}
```

2 Conditional control statement:

Conditional control statement is used to execute a statement with a certain condition.First of all condition is checked and if it is true then one block of statements is executed otherwise next block of statements is executed.It has two directions one along true value and another along false value and hence some time it is also known as bi-directional conditional control statement. If,if…else and else if ladder are examples of conditional control statement.

Syntax of if statement

if(condition)

Statement;

Statement1;

Statement2;

.

.

.

Statement n;

}

Example if(a>b)

printf("\nlarge=%d",a);

OR

if(a>b)

{

printf("\nlarge=%d",a);

goto abc;

}

printf("\n large=%d",b);

abc:;

OR

{

Statement 1;

Statement 2;

.

.

.

Statement n;

}

Syntax of if…else statement:

If(condition)

Statement 1;

else

Statement 2;

OR

if(condition)

{

Statement 1;

Statement 2;

.

.

.

Statement n;

}

else

{

Statement 1;

Statement 2;

.

.

.

Statement n;

}

Example if(a>b)

printf("\n large=%d",a);

else

printf("\n large=%d",b);

Syntax of else if ladder:

```
if(condition 1)
Statement 1;
else if(condition 2)
Statement 2;
else if(condition 3)
Statement 3;
.
.
.
else if(condition n)
Statement n;
else
Statement;
```

Example

```
if(a>b && a>c)
printf("\n large=%d",a);
else if(b>a && b>c)
printf("\n large=%d",b);
else
Printf("\n large=%d",c);
```

3 Multi-directional conditional control statement:

It is used to select one option from a given set of options.It is generally used for menu driven program.switch is the example of multi-directional conditional control statement.Its syntax is:

```
switch(expression)
{
case constant 1:
Statement 1;
break;
case constant 2:
Statement 2;
break;
.
.
.
case constant n:
Statement n;
break;
default:
Statement;
}
```

Program 7:Write a C program to find the arithmetic operations on two given numbers from the following menu by using switch statement.

1. **Add**
2. **Subtract**
3. **Multiply**
4. **Divide**

```
main()
{
int a,b,v,i;
float d;
clrscr();
printf("\n 1. Add");
printf("\n 2. Subtract");
printf("\n 3. Multiply");
printf("\n 4. Divide");
```

```
printf("\n Enter your option(1-4):");
scanf("%d",&i);
switch(i)
{
case 1:
printf("\n Enter two numbers:");
scanf("%d%d",&a,&b);
v=a+b;
printf("\n sum=%d",v);
break;
case 2:
printf("\n Enter two numbers:");
scanf("%d%d",&a,&b);
v=a-b;
printf("\n Subtraction=%d",v);
break;
case 3:
printf("\n Enter two numbers:");
scanf("%d%d",&a,&b);
v=a*b;
printf("\n Multiplication=%d",v);
break;
case 4:
printf("\n Enter two numbers:");
scanf("%d%d",&a,&b);
d=(float)a/b;
printf("\n Division=%f",d);
break;
default:
printf("\n you can enter option(1-4)only:");
}

getch();
}
```

4 Loop control statement:

It is used to execute a statement several times depending upon a certain condition. For,while and do..while are examples of loop control statements.

Syntax of for loop:

```
for(exp1;exp2;exp3)
Statement;
```

Where exp1 is the initial value of counter variable,exp2 is the relational expression and exp3 is the incremental/decremental expression.

```
Example  for(i=1;i<=10;i++)
printf("\t%d",i);
```

Output:1 2 3 …10

Syntax of while loop:

```
Initial value of counter variable;
while(condition)
{
Statement;
Incremental/decremental expression;
}
```

Example

```
i=1;
while(i<=10)
{
```

```
printf("\t %d",i);
i=i+1;
}
```

Output:1 2 3 …10

Syntax of do… while loop:

```
Initial value of counter variable;
do
{
statement;
Incremental/decremental expression;
} while(condition);
```

Example

```
i=1;
do
{
printf("\t %d",i);
i=i+1;
} while(i<=10);
```

Output:1 2 3 …10

Program 8:Write a C program to find the sum of digits of a given number by using for loop.

```
main()
{
int n,s,r;
clrscr();
printf("\n Enter any given number:");
scanf("%d",&n);
s=0;
for(;n!=0;)
{
r=n%10;
s=s+r;
n=n/10;
}
printf("\n sum=%d",s);
getch();
}
```

Program 9:Write a C program to find the sum of digits of a given number by using while loop.

```
main()
{
int n,r,s;
clrscr();
printf("\n Enter any given number:");
scanf("%d",&n);
s=0;
while(n!=0)
{
r=n%10;
s=s+r;
n=n/10;
}
printf("\n sum=%d",s);
getch();
}
```

Program 10:Write a C program to find the sum of digits of a given number by using do …while loop.

```
main()

{

int n,r,s;

clrscr();

printf("\nEnter any given number:");

scanf("%d",&n);

s=0;

do

{
r=n%10;

s=s+r;

n=n%10;

} while(n!=0);

printf("\n sum=%d",s);

petch();

}
```

REFERENCES

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