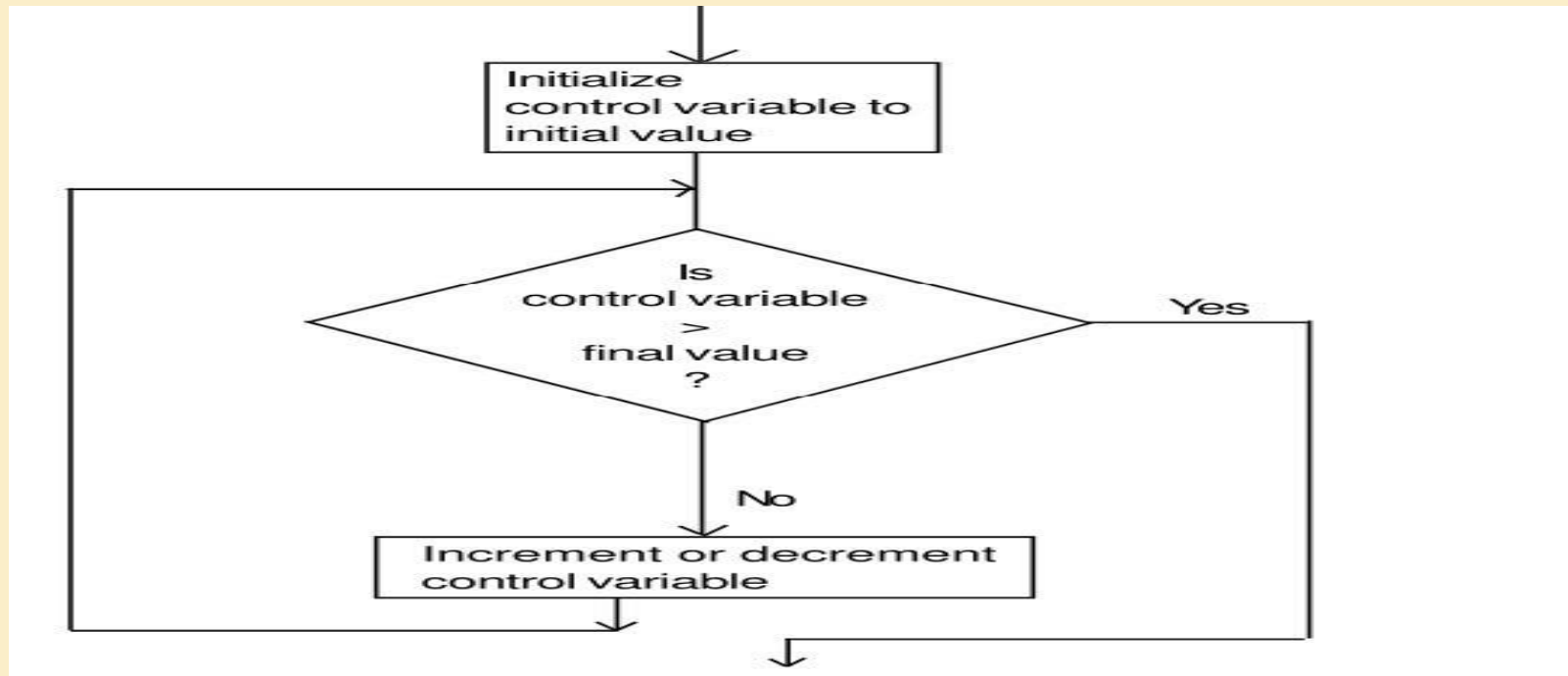


Loop Statements

Nested Loop



Dr. Zaid Ameen

Memory		Screen			
	int num2		int num1		
	0		0	0	0
			1	0	1
			2	1	0
			3	1	1
			end loop	2	2
	1		0	2	0
			1	3	1
			2	3	2

	3 end loop
2	0
	1
	2
	3 end loop
3	0
	1
	2
	3 end loop
4 end loop	

Remember, in the memory, **for** loops will register a value one beyond (or the step beyond) the requested ending value in order to disengage the loop.

Nested for loop statement

```
for ( init; condition; increment )  
{  
    for ( init; condition; increment )  
    {  
        statement(s);  
    }  
    statement(s); // you can put more  
    statements.  
}
```

```

#include<iostream>
using namespace std;
void main()
{
    int i, j, n, m;
    cout << "How many rows?\n";
    cin >> n;
    cout << "How many columns?\n";
    cin >> m;
    for (i = 1; i <= n; i++)
    {
        cout << "i= " << i << endl;
        for (j = 1; j <= m; j++)
            cout << "j= " << j << endl;
        cout << endl;
    }
}

```

n=4

1) For (i=1;i<=n, i++)

Loop1:i=1
Loop2:i=2
Loop3:i=3
Loop4:i=4

n=4, m=3

m=3

2) For (j=1;j<=m, j++)

L1:j=1	L2:j=2	L3:j=3
L1:j=1	L2:j=2	L3:j=3
L1:j=1	L2:j=2	L3:j=3
L1:j=1	L2:j=2	L3:j=3

2) Write a program to compute summation of the following mathematic series:

$1!/2 + 2!/3 + 3!/4 + 4!/5 + \dots + n$

```
#include <iostream>
```

```
using namespace std;
```

```
void main()
```

```
{
```

```
    float sum = 0, f;
```

```
    int n, i, j;
```

```
    cout << "Enter n: " << endl;
```

```
    cin >> n;
```

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

```
    {
```

```
        f = 1;
```

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

```
            f = f * j;
```

```
        cout << f << endl;
```

```
        sum = sum + (f / (i + 1));
```

```
    }
```

```
    cout << "Sum: " << sum << endl;
```

```
}
```

```
sum = 0;
```

```
cin>n;
```

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

```
{
```

```
    f=1;
```

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

```
        f= f * j;
```

```
    sum=sum + (f/(i+1));
```

```
}
```

```
i! = 1*2*3*...*i
```

Ex) Write a program for generating the following output:

```
& & & & & & &
  & & & & &
    & & &
      &
```