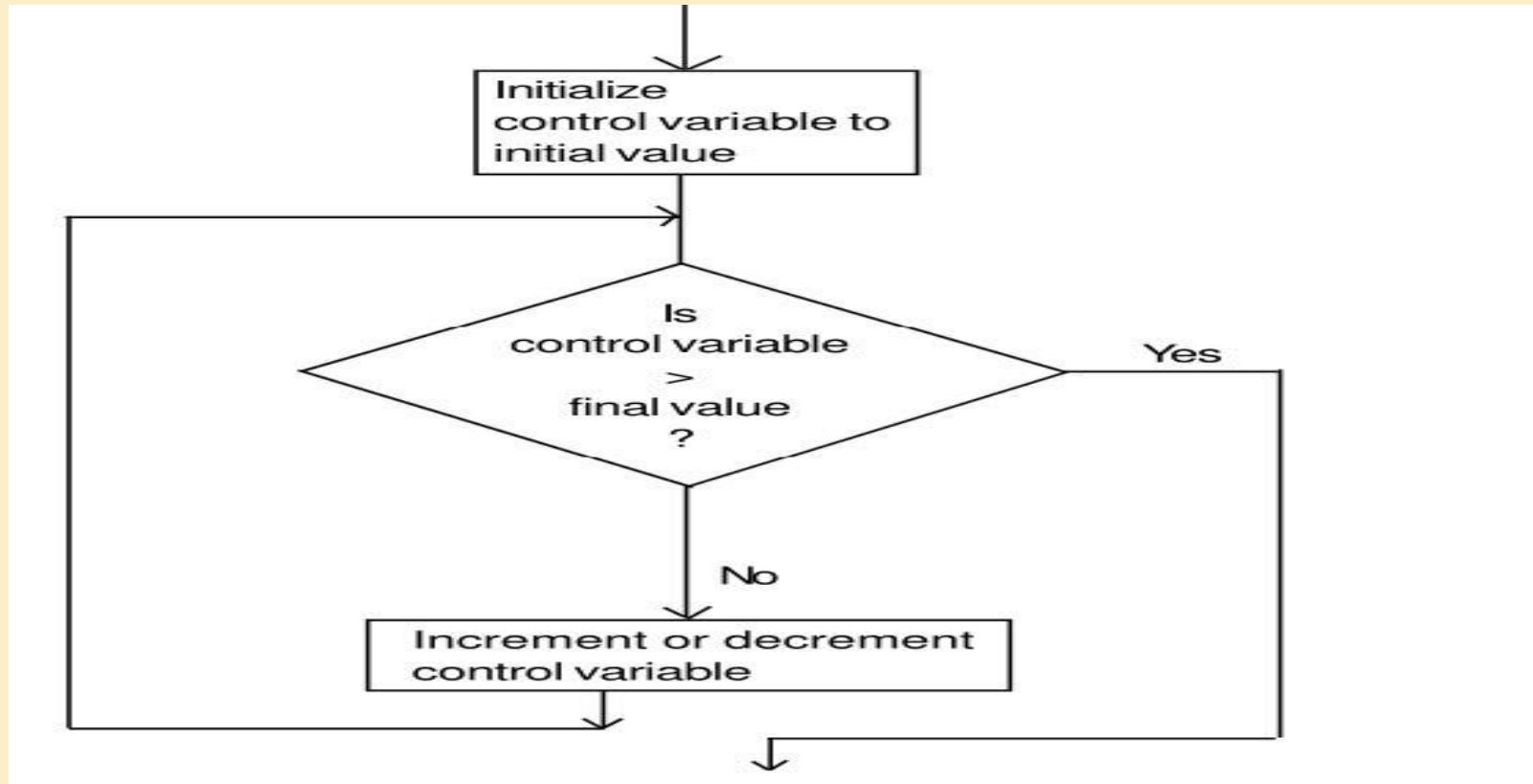


Loop Statements



Dr. Zaid Ameen

6) Write a program that calculates n factorial. Note: $5! = 5 * 4 * 3 * 2 * 1$

```
# include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int n, f = 1;
```

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

```
    cin >> n;
```

```
    for (int i = 2; i <= n; i++)
```

```
        f = f * i;
```

```
    cout << "f != " << f << endl;
```

```
    return 0;
```

```
}
```

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

$$1+3+5+7+9+\dots+99$$

```
# include <iostream>
using namespace std;
int main()
{
int n, Sum = 0;
cout << "enter the n number: ";
cin >> n;
for (int i = 1; i <= n; i += 2)
    Sum = Sum + i;
cout << "Sum: " << Sum << endl;
return 0;
}
```

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

$$2/4+3/6+4/8+5/10+6/12+\dots n$$

$$i= 2$$

$$\text{sum}=\text{sum}+$$

$$(i+1)/ ((i+1)*2)$$

```
include <iostream>
using namespace std;
int main()
{
    float Sum = 0;
    int n;
    cout << "Enter n: " << endl;
    cin >> n;
    for (float i = 1; i <= n; i++)
        Sum = Sum + (i + 1) / ((i + 1) * 2);
    cout << "Sum: " << Sum << endl;
    return 0;
}
```

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

$(a+1)/(b+2) + (a+3)/(b+4) + (a+5)/(b+6) + (a+7)/(b+8) \dots n$

$i=1; \quad i=2;$
 $i*2=2 \quad i*2=4$
 $i*2-1 \quad i*2-1$

$sum = sum + (a + (i*2-1)) / (b + (i*2))$

```
# include <iostream>
using namespace std;
int main()
{
    float Sum = 0, a, b;
    int n;
    cout << "Enter n, a, b " << endl;
    cin >> n >> a >> b;
    for (int i = 1; i <= n; i++)
        Sum = Sum + (a + (2 * i - 1)) / (b + (i * 2));

    cout << "Sum: " << Sum << endl;
    return 0;
}
```

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

$$(a+1)/(b+2) + (a+3)/(b+4) + (a+5)/(b+6) + (a+7)/(b+8) \dots n$$

```
# include <iostream>
using namespace std;
int main()
{
    float Sum = 0, a, b;
    int n;
    cout << "Enter n:, a, b " << endl;
    cin >> n >> a >> b;
    for (int i = 1; i <= n; i++)
        Sum = Sum + (a + (2 * i - 1)) / (b + (2* i));

    cout << "Sum: " << Sum << endl;
    return 0;
}
```

10) Write a program to print the following numbers $n, n-1, n-2, \dots, 1$; and sum the following series $n + (n-1) + (n-2) + \dots + 1$

```
# include <iostream>
using namespace std;
int main()
{
    int n, i;
    float sum = 0;
    cout << "Enter n" << endl;
    cin >> n;
    for (i = n; i >= 1; i--)
    {
        cout << "i = " << i << endl;
        sum = sum + i;
    }
    cout << " sum = " << sum << endl;
    return 0;
}
```

H.W) Write a program to compute summation of the following mathematic series:
 $(a_1+3)/(b_1+5) + (a_2+6)/(b_2+10) + (a_3+9)/(b_3+15) + (a_4+12)/(b_4+20) \dots n$ (H.W)

H.W) Write a program to find the sum and average of (n) integers numbers. These integers are entered by the user.