CSE 113 Structured Programming Language

Control Statement: Loop

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NEUB

Loop: introduction

Loop is used to repeat a block of code until the specified condition is met
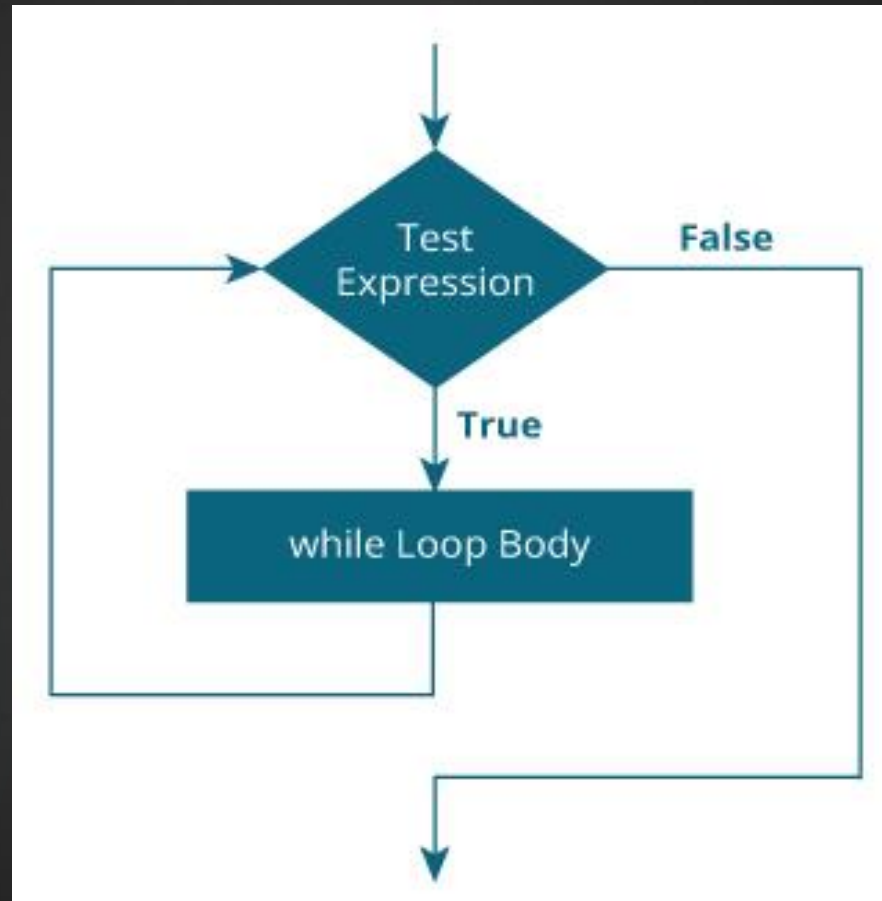
C language has three types of loops:

- ▶ while
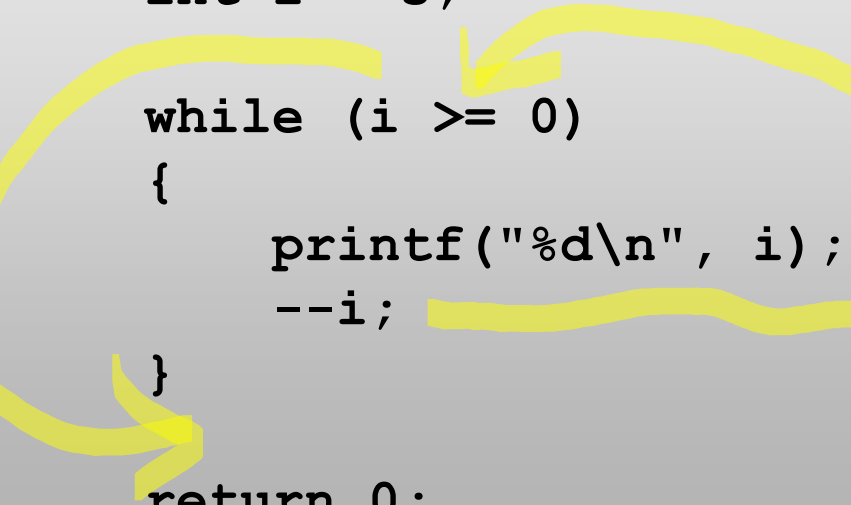- ▶ do...while
- ▶ for

while loop

Syntax

```
while (testExpression)
{
    // statements inside the body of the loop
}
```

while loop

while loop: Example

```c
#include <stdio.h>
int main()
{
    int i = 5;

    while (i >= 0)
    {
        printf("%d\n", i);
        --i;
    }

    return 0;
}
```
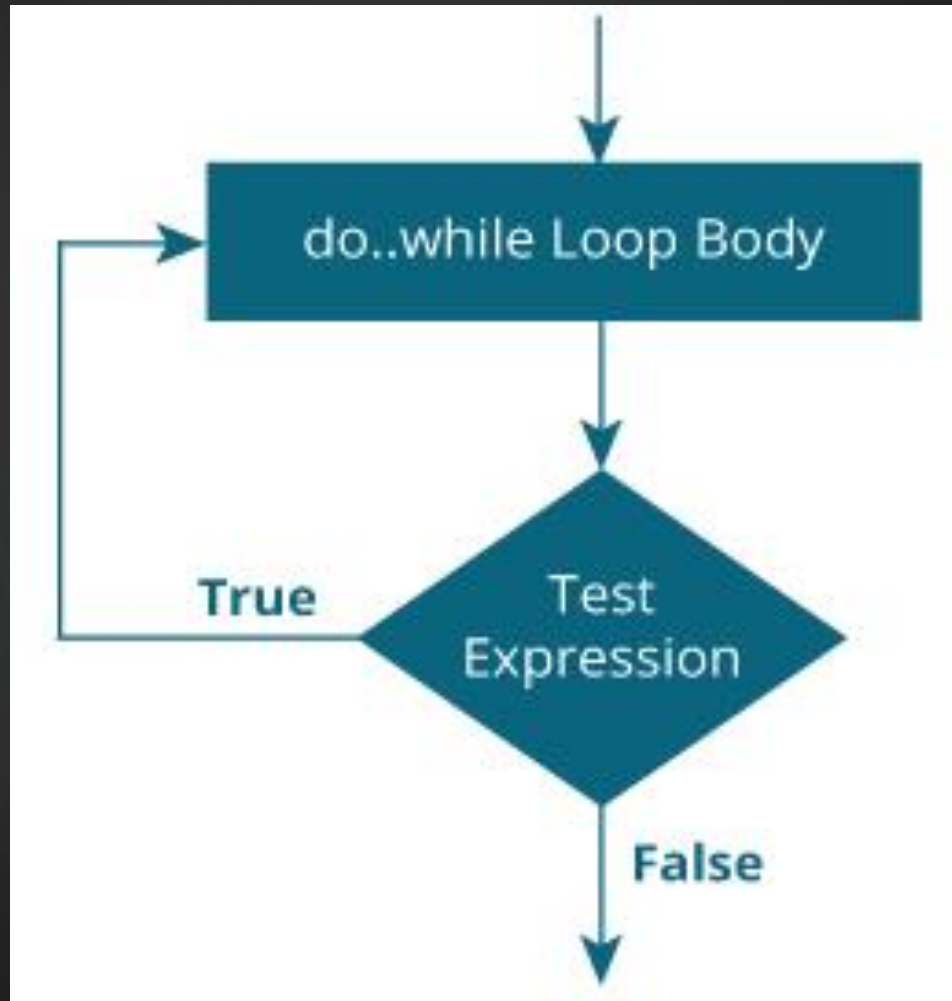
do...while loop

Syntax

```
do
{
    // statements inside the body of the loop
}while (testExpression);
```

do...while loop

do...while loop: Example

```c
#include <stdio.h>
int main()
{
    int i = 1;

    do
    {
        printf("%d\n", i);
        ++i;
    } while (i <= 5);

    return 0;
}
```

do...while loop: Example

```c
#include <stdio.h>
int main()
{
    double number, sum = 0;

    // the body of the loop is executed at least once
    do
    {
        printf("Enter a number: ");
        scanf("%lf", &number);
        sum += number;
    }while(number != 0.0);

    printf("Sum = %.2lf",sum);

    return 0;
}
```

Find output

```c
int main(){
    int a=0;

    while(a<=10)
        printf("%d\n", a++);

    return 0;
}
```

```c
int main(){
    int i = 0, x = 0;

    while(i <= 15){
        if(i%5 == 0){
            x += i;
            printf("%d ", x);
        }
        i++;
    }

    printf("\nx = %d ", x);
    return 0;
}
```

Find output

```c
int main(){
    int a=0;

    do{
        printf("%d\n", ++a);
    }while(a<=10);


    return 0;
}
```

```c
int main(){
    int i = 0, x = 0;

    do{
        if(i%5 == 0){
            x += i;
            printf("%d ", x);
        }
        i++;
    } while(i < 15);

    printf("\nx = %d ", x);
    return 0;
}
```
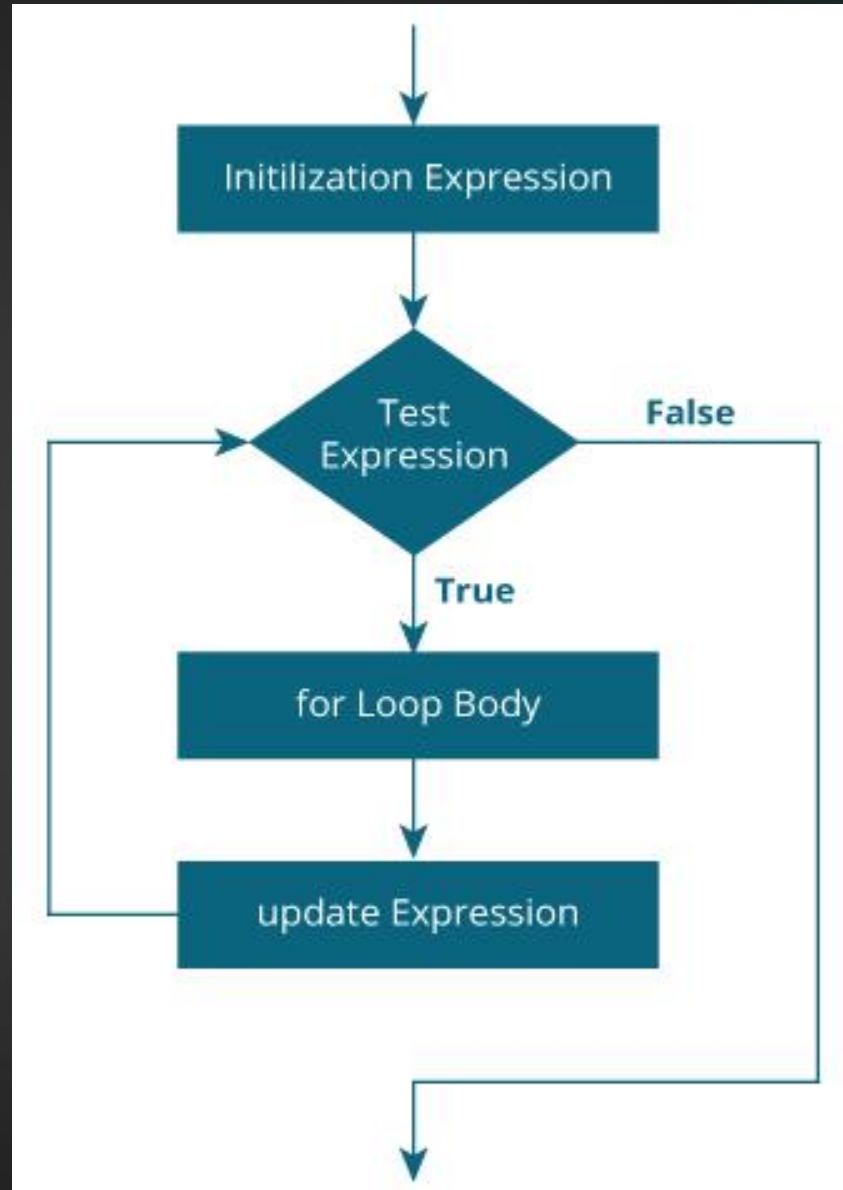
for loop

Syntax

```
for (initializationExpression; testExpression; updateExpression)
{
    // statements inside the body of loop
}
```

for loop

for loop: Example

```c
#include <stdio.h>

int main(){
    int i=0, x=2;
    for(i=1; i<10; i+=2)
    {
        x++;
        printf("%d ", x);
    }

    printf("\ni= %d, x= %d", i,x);

    return 0;
}
```