Lecture 4

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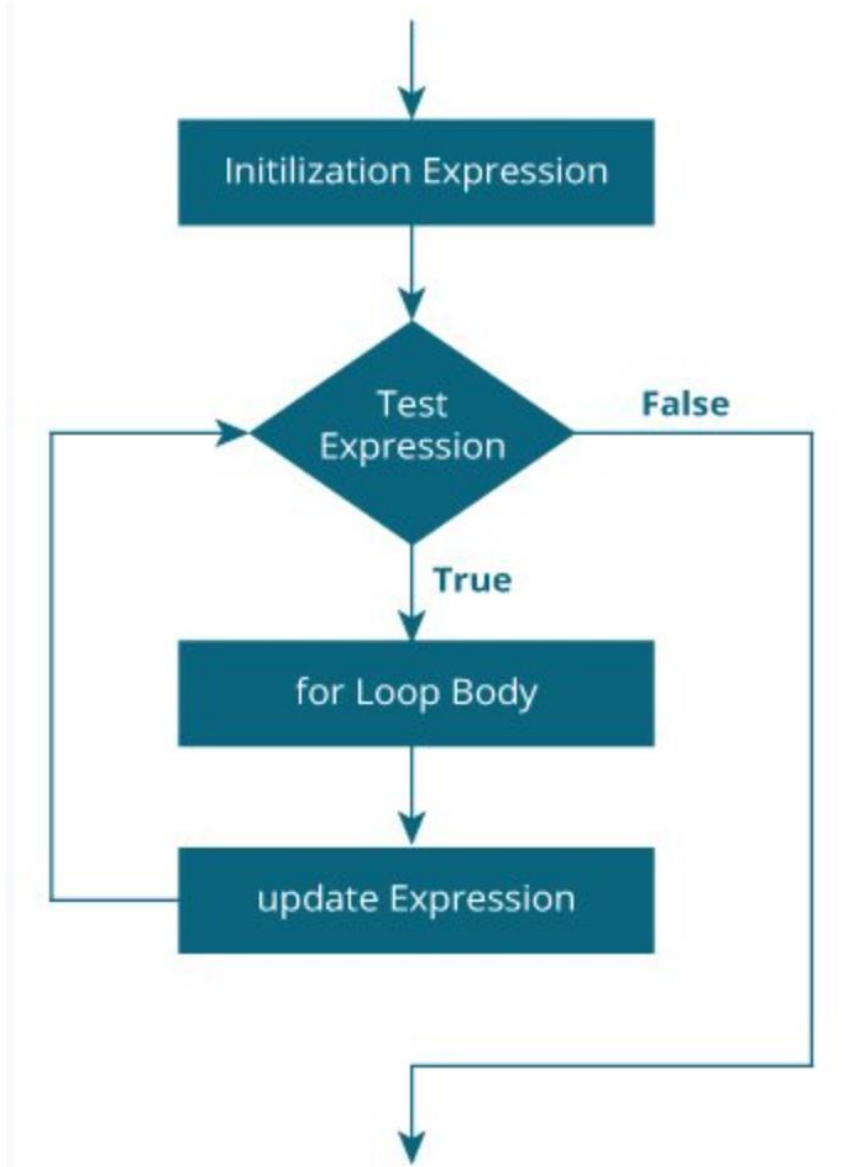


Working of for loop

Example 1: for loop

```c
// Print numbers from 1 to 10
#include <stdio.h>

int main() {
  int i;

  for (i = 1; i < 11; ++i)
  {
    printf("%d ", i);
  }
  return 0;
}
```

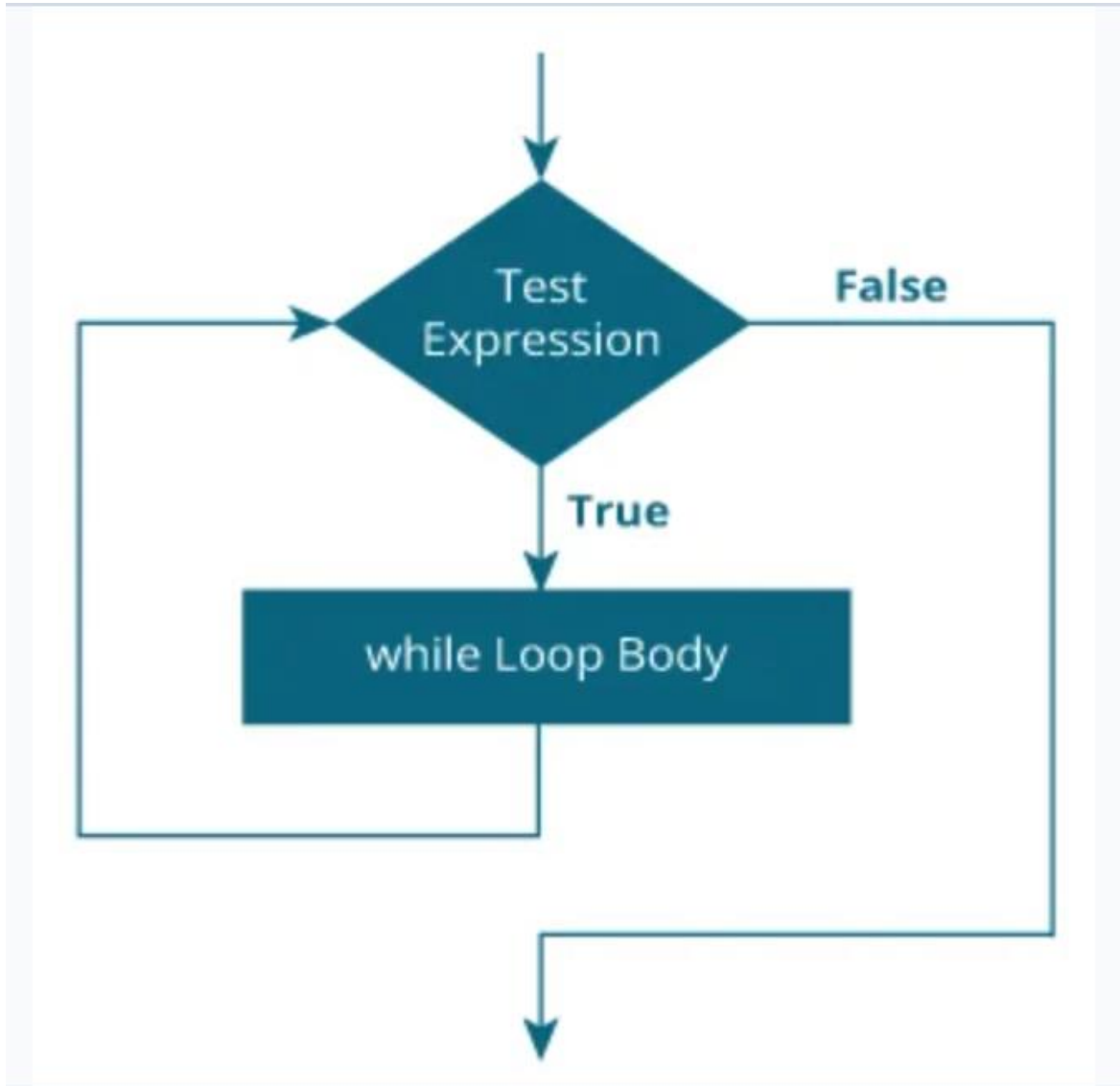
Output

```
1 2 3 4 5 6 7 8 9 10
```

while loop

The syntax of the `while` loop is:

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



Working of while loop

Example 1: while loop

```c
// Print numbers from 1 to 5

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

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

  return 0;
}
```

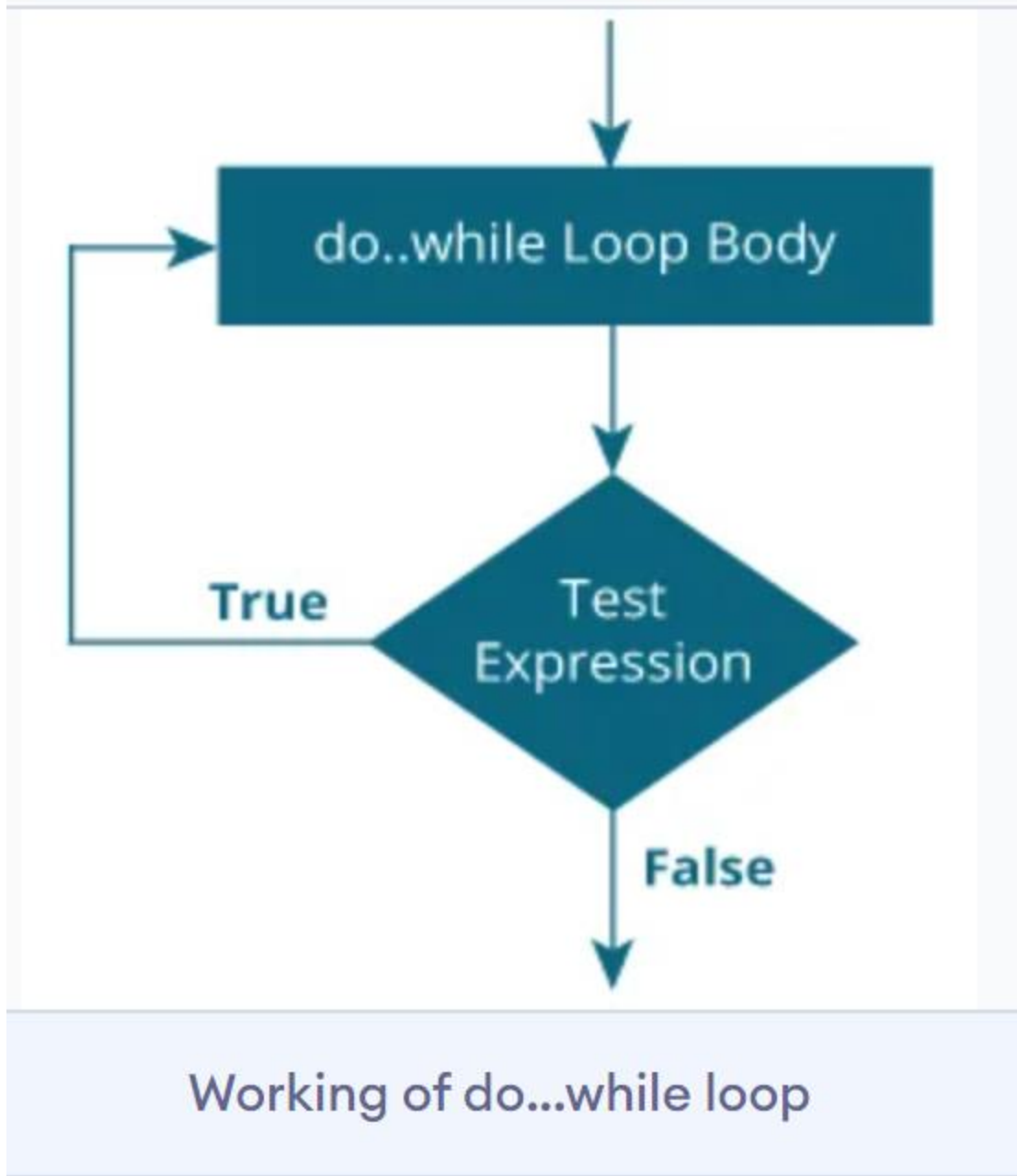
Output

```
1
2
3
4
5
```

do...while loop

The syntax of the `do...while` loop is:

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



Working of do...while loop

Example 2: do...while loop

```c
// Program to add numbers until the user enters zero

#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;
}
```

Output

```
Enter a number: 1.5
Enter a number: 2.4
Enter a number: -3.4
Enter a number: 4.2
Enter a number: 0
Sum = 4.70
```

break and continue

How break statement works?

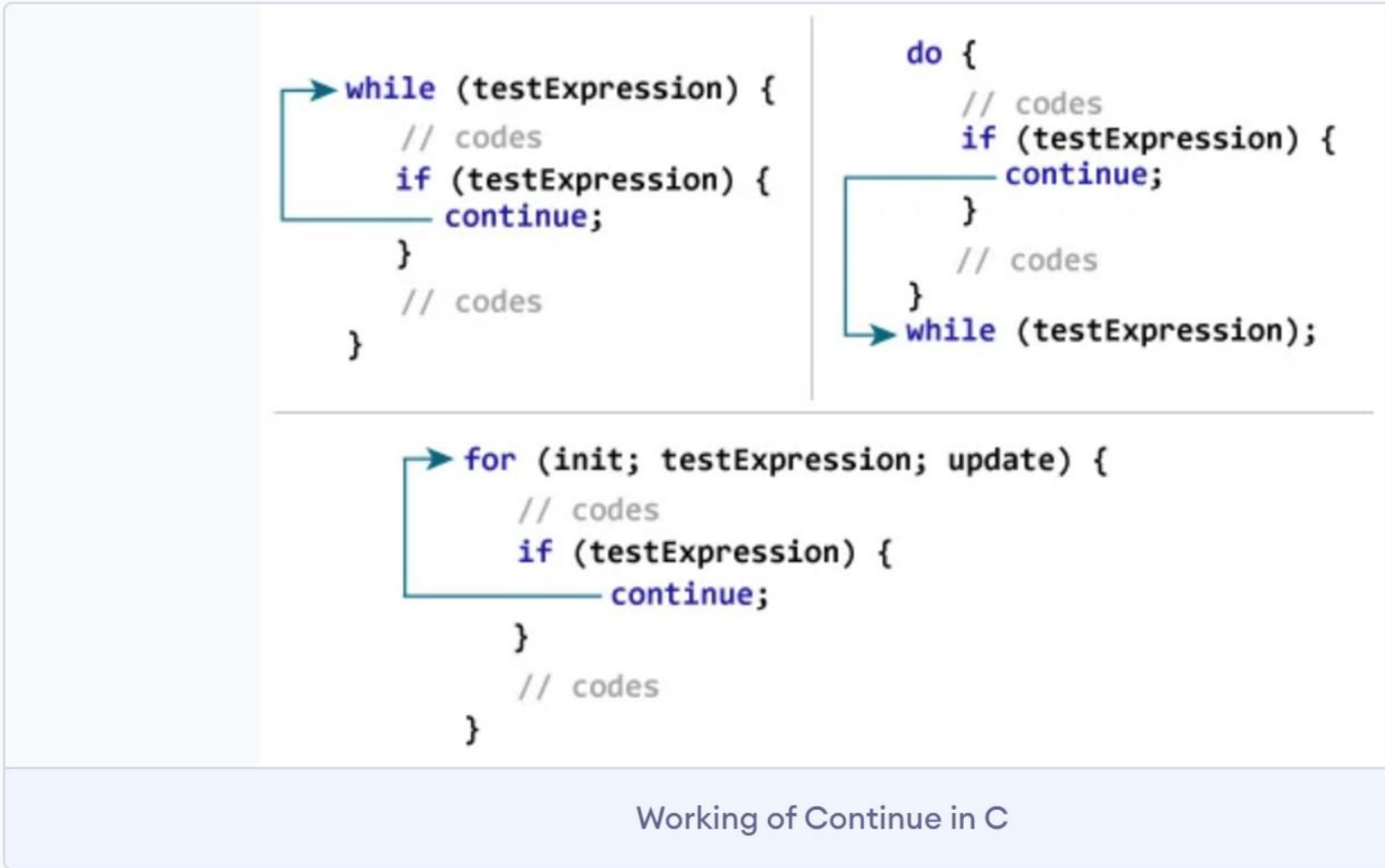
```
while (testExpression) {
   // codes
   if (condition to break) {
      break;
   }
   // codes
}
```

```
do {
   // codes
   if (condition to break) {
      break;
   }
   // codes
}
while (testExpression);
```

```
for (init; testExpression; update) {
   // codes
   if (condition to break) {
      break;
   }
   // codes
}
```

Working of break in C

How continue statement works?



Working of Continue in C

```c
// Program to calculate the sum of numbers (10 numbers max)
// If the user enters a negative number, the loop terminates

#include <stdio.h>

int main() {
   int i;
   double number, sum = 0.0;

   for (i = 1; i <= 10; ++i) {
      printf("Enter n%d: ", i);
      scanf("%lf", &number);

      // if the user enters a negative number, break the loop
      if (number < 0.0) {
         break;
      }

      sum += number; // sum = sum + number;
   }

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

   return 0;
}
```

```
Enter n1: 2.4
Enter n2: 4.5
Enter n3: 3.4
Enter n4: -3
Sum = 10.30
```

Example 2: continue statement

```c
// Program to calculate the sum of numbers (10 numbers max)
// If the user enters a negative number, it's not added to the result

#include <stdio.h>
int main() {
   int i;
   double number, sum = 0.0;

   for (i = 1; i <= 10; ++i) {
      printf("Enter a n%d: ", i);
      scanf("%lf", &number);

      if (number < 0.0) {
         continue;
      }

      sum += number; // sum = sum + number;
   }

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

   return 0;
}
```

Output

```
Enter n1: 1.1
Enter n2: 2.2
Enter n3: 5.5
Enter n4: 4.4
Enter n5: -3.4
Enter n6: -45.5
Enter n7: 34.5
Enter n8: -4.2
Enter n9: -1000
Enter n10: 12
Sum = 59.70
```