

Class 06

While Loops to Repeat an Action

Repeated Decisions - Loops

```
while (true/false question) {  
    statement(s); // executes repeatedly as  
    long as question is true  
}
```

If question is true, statement executes repeatedly until the question becomes false

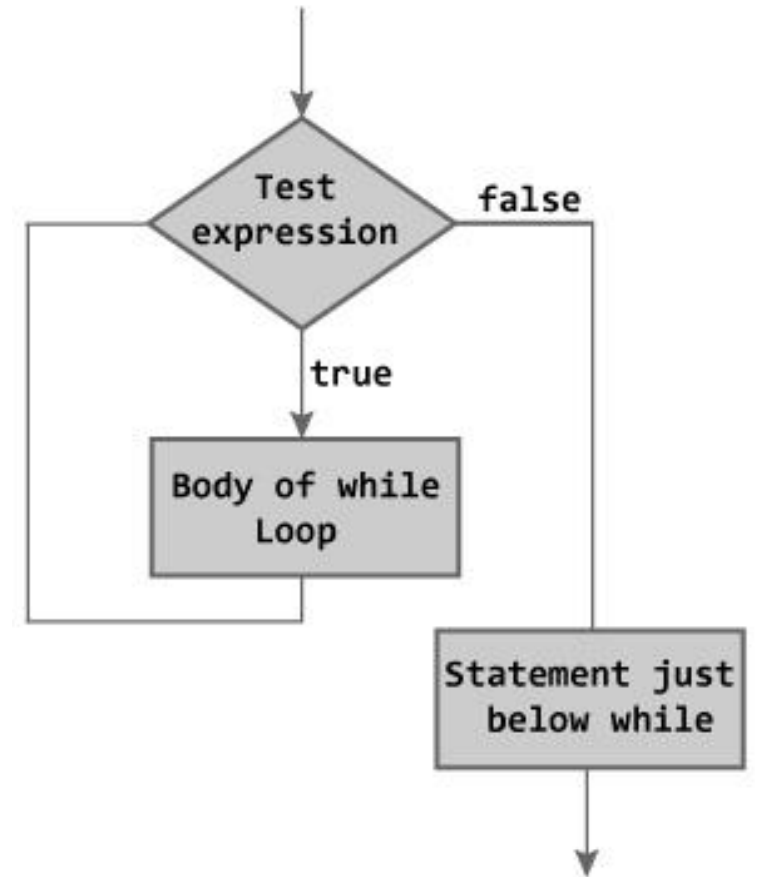


Figure: Flowchart of while Loop

Making Decisions – If vs. While

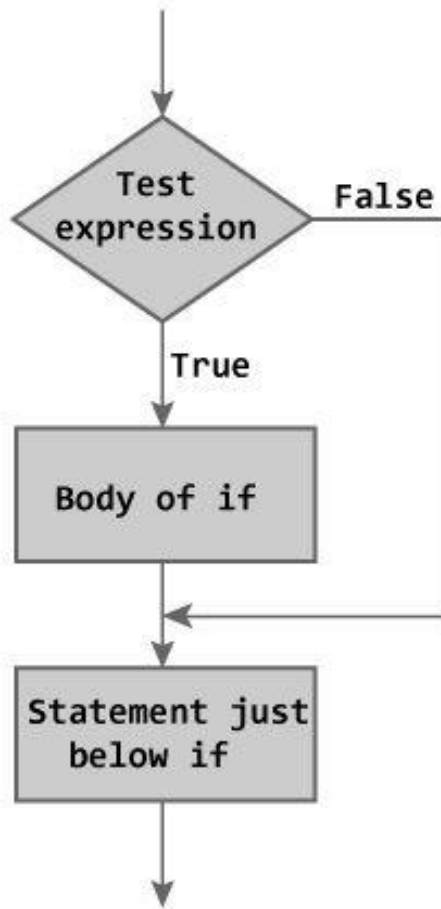


Figure: Flowchart of if Statement

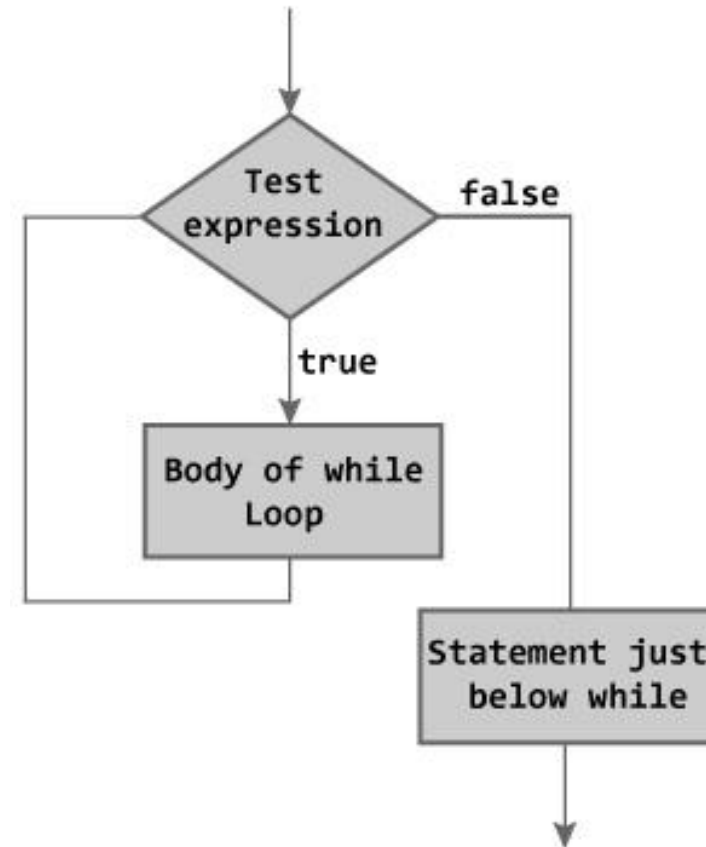


Figure: Flowchart of while Loop

Formulating Conditions

- Translate human question into computer code
- Examples given integers x , y and z :
 - Is x even?
 - Are x and y both even?
 - Are any of x , y or z odd?

Some Applications of Loops

- Validate input
 - Force the user to enter input of a required type
- Allow the user a certain number of attempts to enter data
 - Loop until the user enters a correct value or they run out of tries
- Receive unbounded number of input values from user
 - User enters values until they signal they are finished

Examples

1. Force the user to enter a number divisible by 5.
2. Say “Hello” ten times.
3. Give the user three tries to enter a number that is a multiple of 13 before terminating the program.
4. Add up all numbers entered by a user until they enter a 0.
5. Compute the average of all non-zero numbers entered by a user.