

Computer programming

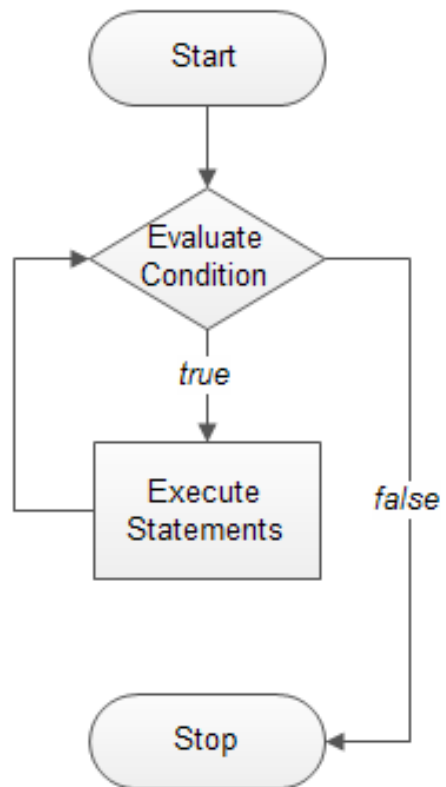
Section 3

Agenda

- Loops
- Functions
- Arrays

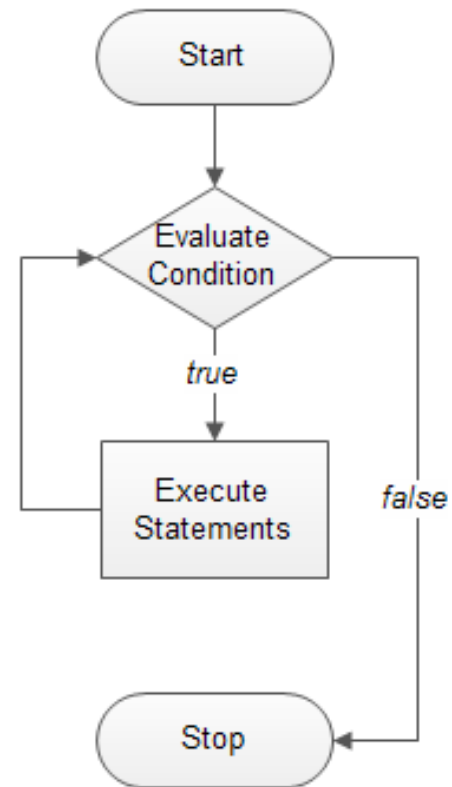
- Division program

Loops



Main elements of a loop

- Variable definition
- Variable updating
- Check condition (Test)



while loop

```
while(Condition){  
    ...//Do this until condition is false  
    ...  
    ...}  
    ...
```

while loop

```
int index=0;
while(index <=10){
    ....
    //Do this until condition is false
    cout<<index;
    index = index +1;
    ....
}
```

- Variable definition
- Variable updating
- Check condition (Test)

- Division program

for loop

```
for (initialization; condition ; update){  
.....  
    // Do this until condition is false  
.....  
}
```

```
.....
```

for loop

```
int index=0;
while(index <=10){
.....
//Do this until condition is false
cout<<index;
index = index +1;
.....
}
.....
```

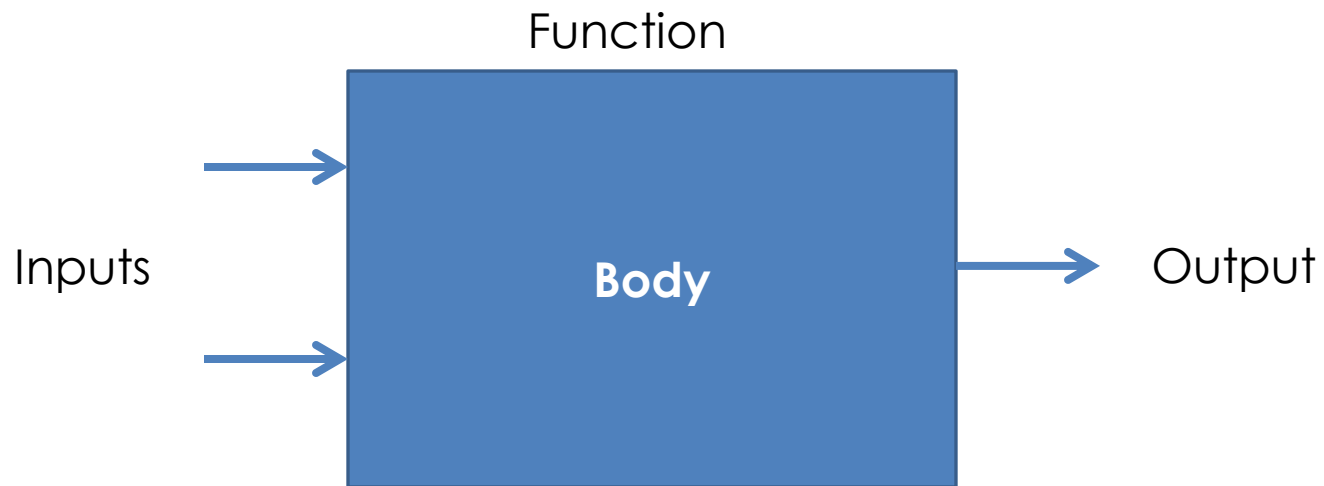
```
for (int index = 0 ; index<=10 ; index++){
.....
// Do this until condition is false
cout<<index;
}
.....
.....
```

Loops

```
int num = 10;
while (num > 3)
{
    num += 1;
    cout << num;
}
```

```
for (int i = 0; i < 10; i++)
{
    cout << "*****" << endl;
}
```

Functions



How to call a function

```
float num1,num2, num3;
```

```
cin >> num1;
```

```
num2 = sqrt(num1);
```

```
cout << "The square root of " << num1 << "is " << num2<<endl;
```

```
num3 = pow(num1, 2);
```

```
cout << "The square of " << num1 << "is " << num3<<endl;
```

How to define a function

```
float functionName (int Input1, float Input2, ...){
```

Output type Function name Inputs type and names

```
... // Function Body  
... }
```

```
1 | int main(){  
2 |   ...  
3 |   }
```

How to define a function

```
float square (float num){
```

```
...
```

```
... float result ;
```

```
... result = num*num;
```

```
... return result;
```

```
.....
```

```
... }
```

```
.....
```

How to define a function

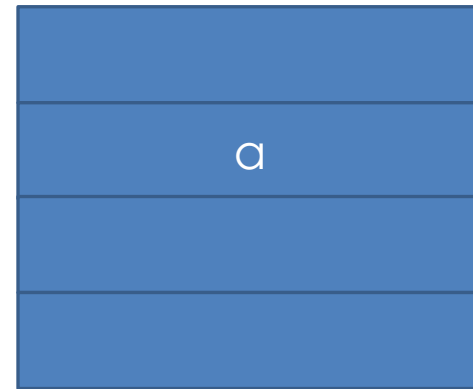
```
void printGreeting (){  
.....  
    cout<<"***** " <<endl;  
    cout<<"-----Welcome to our program----- " <<endl;  
    cout<<"***** " <<endl;  
.....  
}
```


Array

```
char letter;  
cin >> letter;  
// user input a letter 'a'  
...
```

letter

Memory

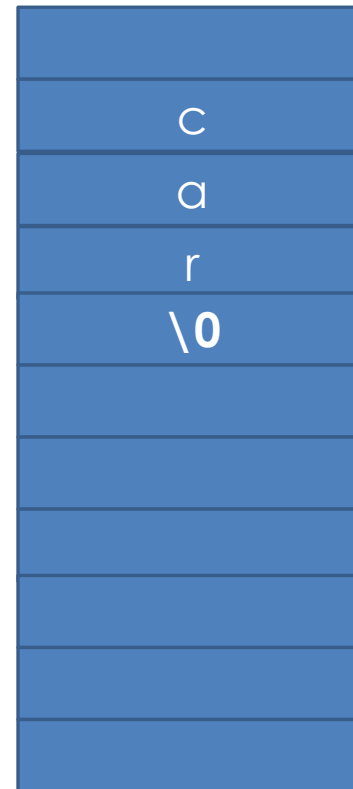


```
char word [10];  
cin >> word;  
// user input a word "cat"
```

- This is called **character array**

word

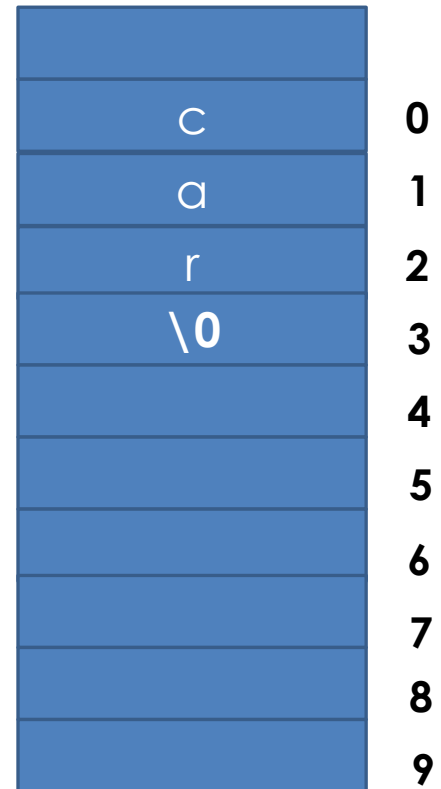
Memory



```
char word [10];  
cin >>word;  
// user input a word "cat"  
cout << "The first letter is " << word[0] <<endl;
```

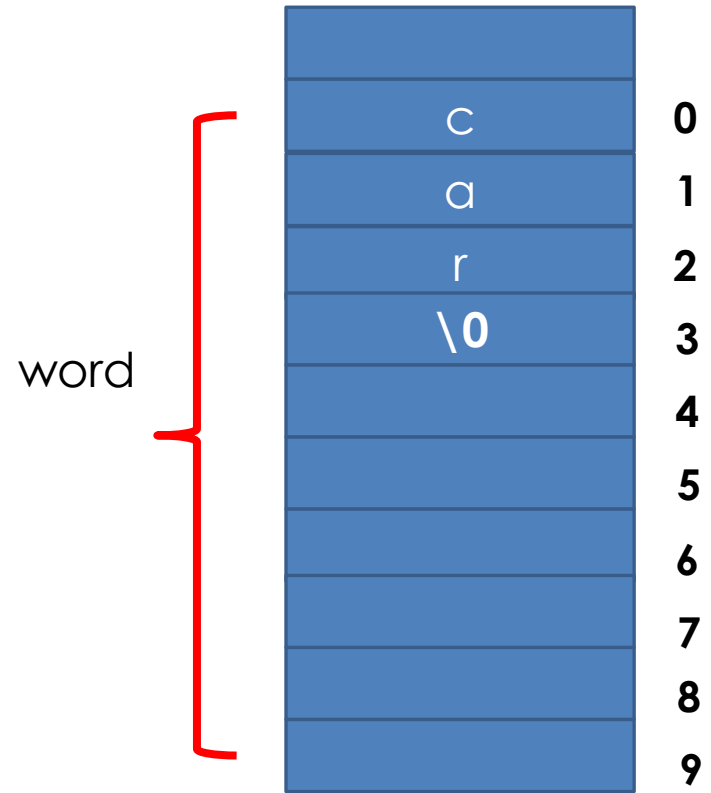
word

Memory



- Example

Memory



- Example
- Read the users name. Printing his name first letter and last letter

```
int main(){
    char name [20];
    cin>> name;
    cout << "Your name first letter is " << name[0] <<endl ;

    int i = 0;
    while(name[i] != '\0'){
        i++;
    }
    cout <<"Your name last letter is " << name[i-1] ;
}
```

```
int main(){
    char name [20];
    cin>> name;
    cout << "Your name first letter is " << name[0] <<endl ;
    int i = 0;
    for(int i = 0; i<20; i++){
        if(name[i] == '\\0'){
            cout<<"Your name last letter is " << name[i-1] <<endl;
            break;
        }
    }
}
```

Assignment

- Write a program that reads a paragraph from the user and do the following:
 - Print number of letters, words and sentences.
- Your program should contain:
 - a function to count and print number of letters.
 - a function to count and print number of words.
 - a function to count and Print number of sentences, given that a sentence should end with a **dot** character ‘.’
 - Intelligent program is more appreciated !.

Assignment cont.

- Send the file that includes your program (main.cpp) along with screenshots for the output of the program in a compressed file.
- Send the assignment on email:
Yehia.Zakaria@eng.asu.edu.eg
- The email subject should be: “**Prog. Assignment 2**”