

# **SPM 2102**

# **PROGRAMMING LANGUAGE 1**

# **C++ Programming Structure**

**By**

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## Selection / making decision

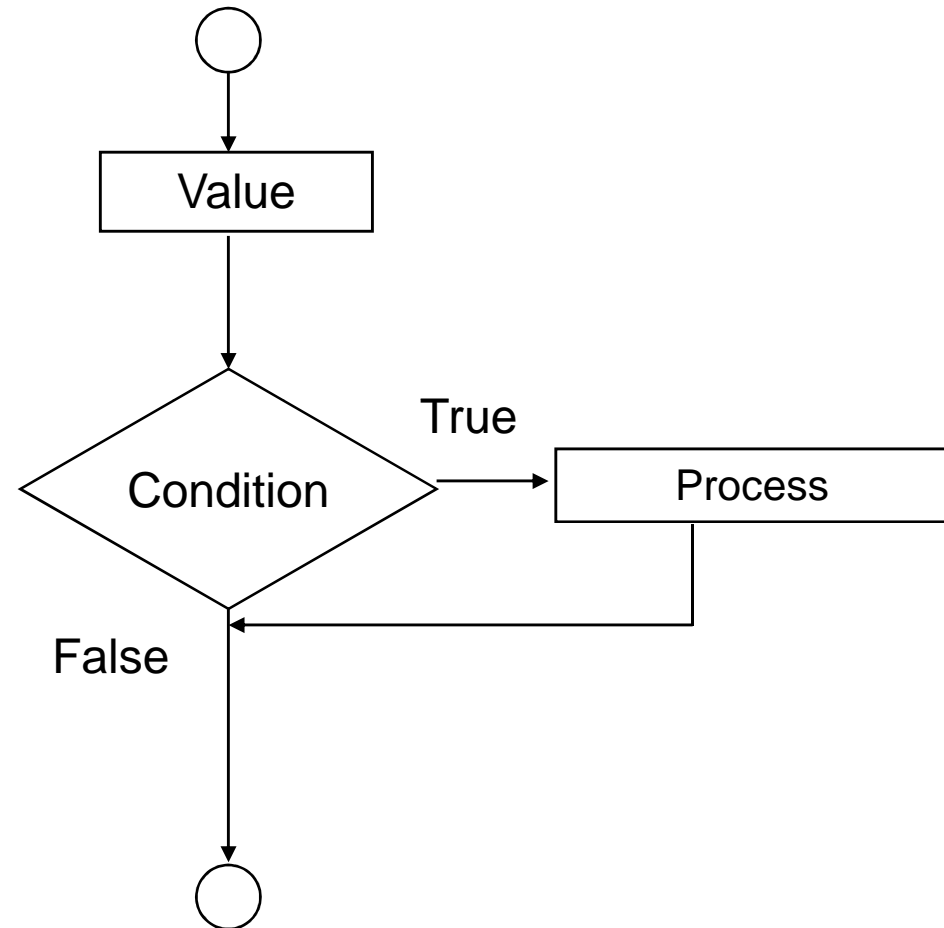
- If statement
- if-else, if-else-if or nested if
- Switch Case

# Introduction: Flow of control

- Normal flow of control is sequential
  - statements are executed one after another in the order they are written
- Special structures to change of control:
  - Selection
    - Conditionally execute next statement (if, if-else, if-else-if, switch-case)
  - Iteration (repetition, loops)
    - Repeatedly execute next statement (with condition)
    - for, while, do-while

# If Statement

If markah > 80  
YES? TRUE?  
    then process  
NO? FALSE?  
end



## if Statement : Syntax

- if ( condition ) statement; or
- if ( condition )  
{  
    statement 1;  
    statement 2;  
    ...  
    statement N;  
}

## if Statement : examples

```
#include<conio.h>
#include<iostream.h>
void main()
{
int value;
cout<<"Jika markah lebih 80, TAHNIAH akan dipaparkan";
cout<<"\nJika markah kurang 80, maka TAMAT ";
cout<<"\nMasukkan nilai : ";
cin>>value;
if (value>=80)           //condition **syarat
    cout<<"\n TAHNIAH \n"; //statement **pernyataan
getch();
}
```

## If Statement : examples

```
#include<conio.h>
#include<iostream.h>
void main()
{
int markah;
cout<<"Masukkan markah peperiksaan : ";
cin>>markah;

if (markah>=40)
{
cout<<"LAYAK menduduki peperiksaan akhir"<<endl;
cout<<"Berusahalah bersungguh-sungguh";
}
getch();
}
```

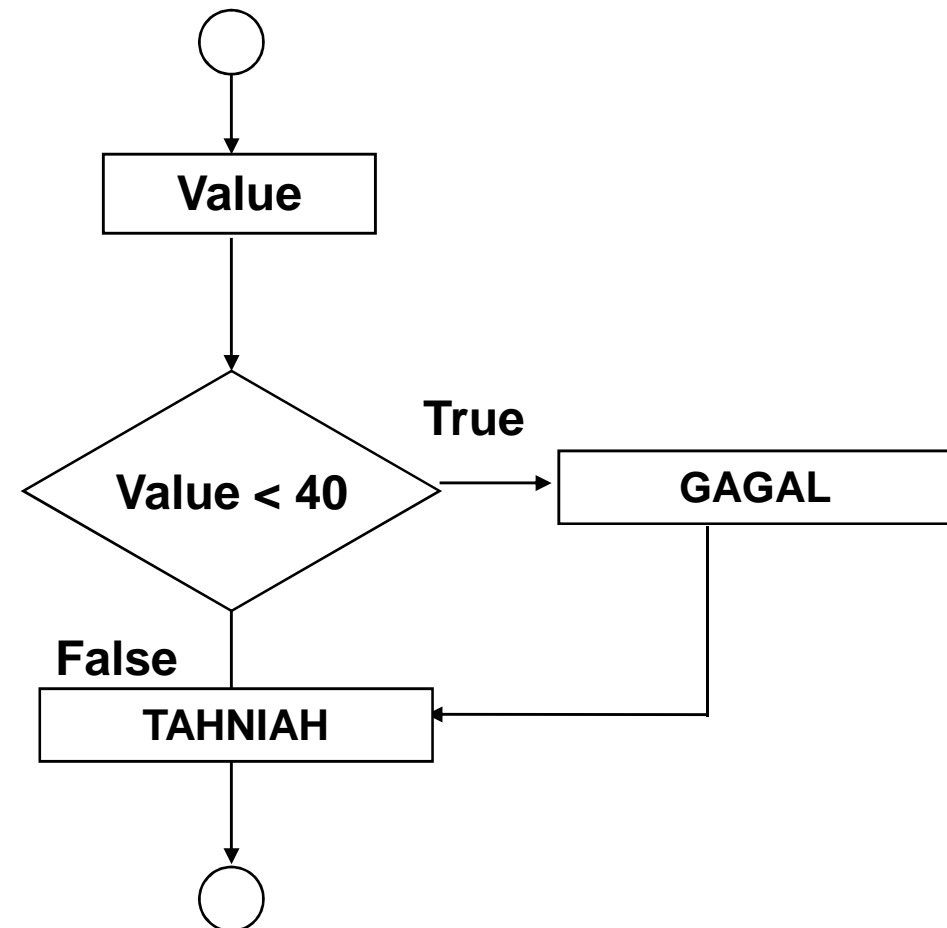
## if Statement : examples

- `if( marks >= 80 ) grade = 'A';`
- `if ( x > 0 && x < 10 ) sum++;`
- `if( key == 'A' ) {  
    avg = TotMarks/students; //process  
    cout << "Average marks is" << avg; }`



# If – else Statement

- **if value <40**  
    **TRUE? GAGAL**  
**else**  
    **FALSE? TAHNIAH**  
**end**



## if-else Statement : syntax

- if ( condition )  
    statement1;  
else  
    statement2;

- if ( condition )  
  {  
    statement1;  
    statement2;  
  }  
else  
  {  
    statement3;  
    statement4;  
  }

## if-else Statement : Example

```
float marks;
```

```
cout << "Enter your marks" << endl;
```

```
cin >> marks;
```

```
if( marks >= 50 )
```

```
    cout << "You've passed!";
```

```
else
```

```
    cout << "You've failed!" << endl
```

# if-else-if Statement

- Syntax:

```
if ( condition1 ) statement1;
```

```
    else if ( condition2 ) statement2
```

```
    else if ( condition3 ) statement3
```

...

```
    else if ( conditionN-1 ) statementN-1;
```

```
    else statementN
```

# if-else-if Statement : Example

```
#include <iostream.h>
#include <conio.h>
void main ( )
{
char choice;
cout<<"Insert your color : R/B/Y ?";
cin >> choice;
if ( choice == 'R' || choice == 'r' ) cout << "Red" << endl;
else if ( choice == 'B' || choice == 'b' ) cout << "Blue" << endl;
else if ( choice == 'Y' || choice == 'y' ) cout << "Yellow" << endl;
else cout << "Error" << endl;
getch();
}
```

# Switch Statement

- Syntax:

```
switch( expression )
```

```
case expression1: statement1; break;
```

```
case expression2: statement2; break;
```

```
...
```

```
case expressionN: statementN1; break;
```

```
default: default_statement;
```

```

#include <iostream.h>                                // Multi if example
#include <conio.h>
void main () {
int no1, no2, choice;
cout<<"Pilih operasi: 1: Tambah , 2: Tolak , 3: Darab"<<endl;
cin >> choice;
cout<<"Masukkan nombor pertama"<<endl;
cin>>no1;
cout<<"Masukkan nombor kedua"<<endl;
cin>>no2;
if ( choice == 1)
    cout <<no1+no2<< endl;
else if ( choice == 2)
    cout <<no1-no2<< endl;
else if ( choice == 3)
    cout <<no1*no2<<endl;
else
    cout << "Error" << endl;
getch();
}

```

```

#include <iostream.h>                                // Switch case example
#include <conio.h>
void main ()
{
int no1, no2, choice;

cout<<"Pilih operasi: 1: Tambah , 2 : Tolak , 3 : Darab"<<endl;
cin >> choice;
cout<<"Masukkan nombor pertama"<<endl;
cin>>no1;
cout<<"Masukkan nombor kedua"<<endl;
cin>>no2;
switch (choice) {
    case 1 : cout <<no1+no2<< endl; break;
    case 2 : cout <<no1-no2<< endl; break;
    case 3 : cout <<no1*no2<< endl; break;
    default : cout << "Error" << endl; break;
}
getch();
}

```



# Looping / Iteration

- *While*
- *Do-While*
- *For*

# Looping Structure - While

- Syntax for Looping structure - While

```
while (condition)  
{  
    Statement 1 ;  
    Statement 2;  
    Statement n;  
}
```

# Looping structure - *while*

```
#include <iostream.h>
```

```
int x = 1;
```

```
int Y;
```

```
main(){
```

```
    while ( Y <= 21 )
```

```
{
```

```
    Y = x * x;
```

```
    cout<<"\n"<<"x"<<" power of 2 = " <<Y;
```

```
    x++;
```

```
}
```

```
}
```

Cycle	x	Y
1	1	1
2	2	4
3	3	9
4	4	16
5	5	25
6	6	exit

## Looping Structure : DO-WHILE

- Syntax for Looping structure Do - *while*

**do**

*statement;*

**while (*condition*);**

- Example :

```
number = 0;
do
{
    cout<<number;
    number=number+1;
} while (number < 10)
```

## Looping Structure : Difference

- *While*

```
number = 0;  
while (number < 10)           //condition  
{  
    cout<<number;           //statement  
    number++;  
}
```

- *Do-while*

```
number = 0;  
do  
{  
    cout<<number;           //statement  
    number=number+1;  
} while (number < 10);      //condition
```

## Looping Structure : FOR

- Specifically used for specific loop define (user OR default)

*for (default ; condition ; increment/decrement\_condition)  
statement*

- Example :*

```
for (x=1 ; x <= 10 ; x++)  
    cout<<x;
```

*Note : x by default = 0 & x incrementally till 10*

Cycle	x
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

That's all 😊