

الكتاب
باللغتين
العربية
والإنجليزية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

أساسيات في لغة الجافا

مهند جودة جمابيل



2008

المحتويات

.....

.....

..... Netbeans IDE

.....

.....

..... (1

.....Data type (2

..... (3

..... (4

.....

.....If stament

..... If ... else

.....do—while

..... While Loop

.....Switch case

.....BufferedReader.

..... Boxes

.....

.....

.....

..... netbeanse

machine language

(()) Assembly language (())

High-level languages

((HLL))

))

Windows XP

Operating System ((

C++

UNIX

Sun Microsystem

1990

.C++

(2 .

(1

(3 .C++

-:

sub-problem

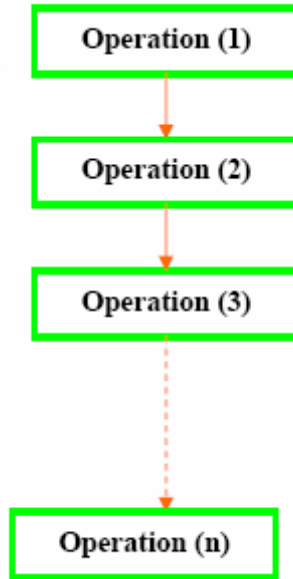
. / .1

.2

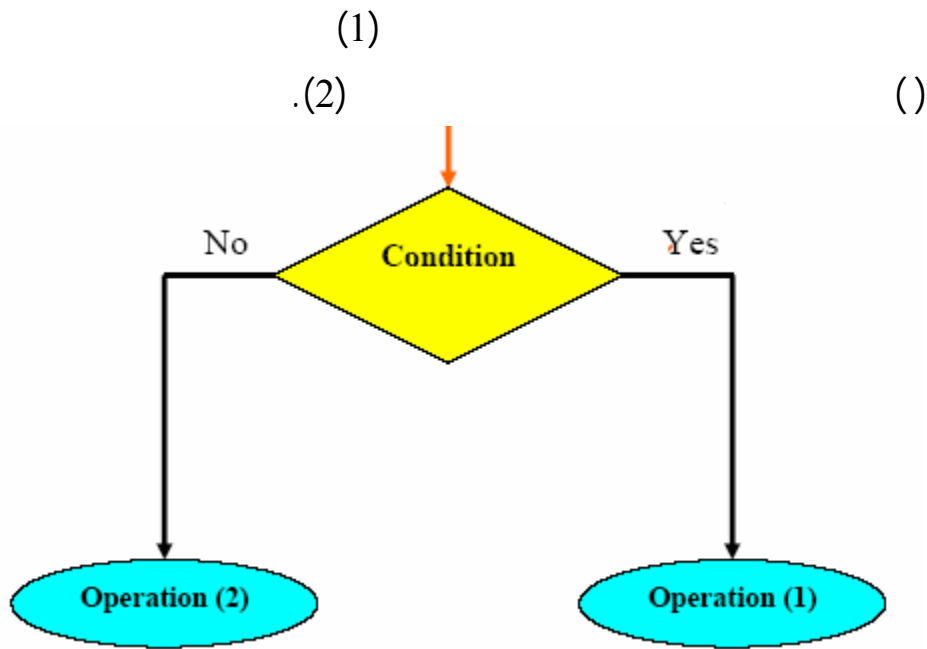
.3

-:

(1)

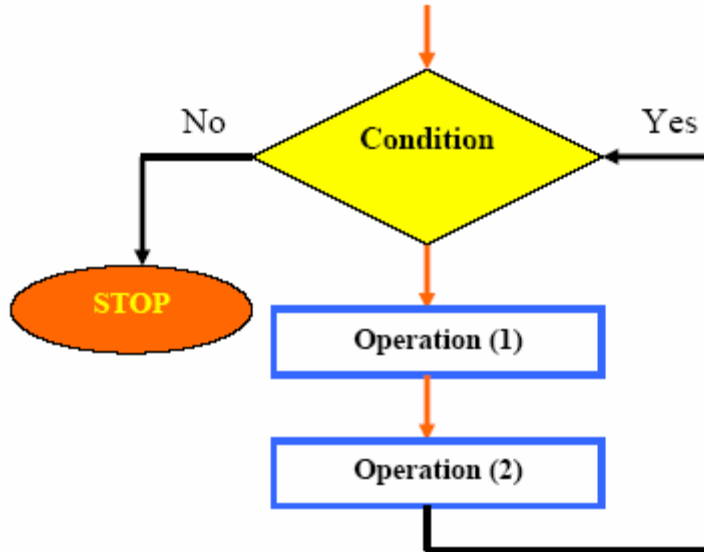


_____ :-

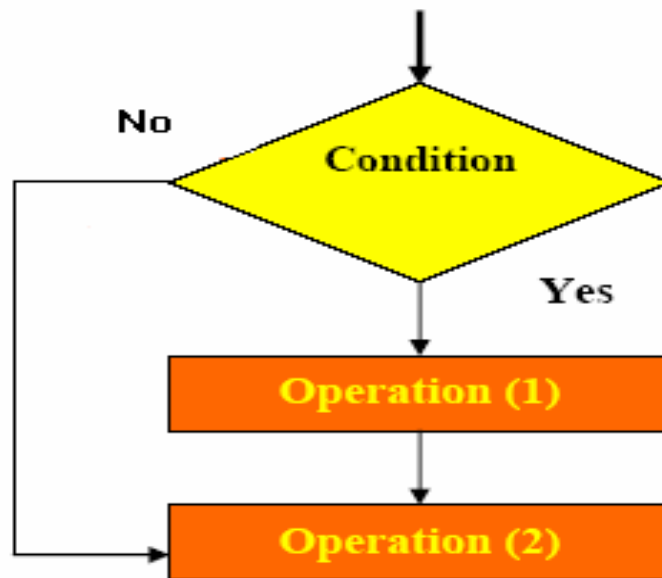


_____ :

...
() . () () (1)



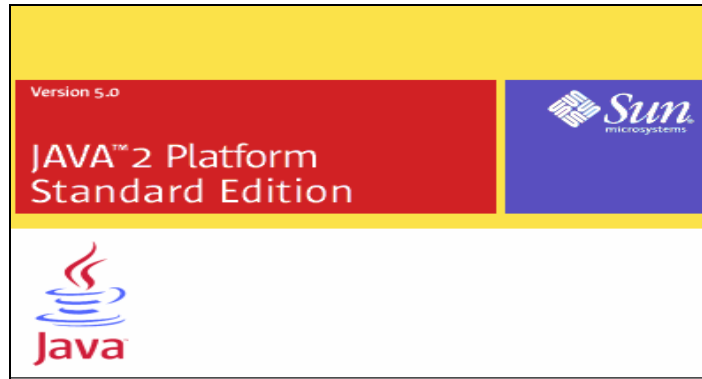
– (2) () (2) (1) ()
– :
–



Netbeanse IDE

setup file

<http://www.java.sun.com>



Special symbol

(1

		No.
	+	.1
	-	.2
	/	.3
	*	.4
		.5
..... ..	&	.6
	!	.7
reminder	%	.8

Data Type (2)

(()) /		No.
.	String	.1
16	Integer	.2
32	Float	.3
64	Double	.4
/	Boolean	.5
8	Char	.6

(3)

		No.
New Line	\n	.1
Tab	\t	.2
Double quote	\"	.3
Single quote	\'	.4
Back space	\b	.5
Form feed	\f	.6

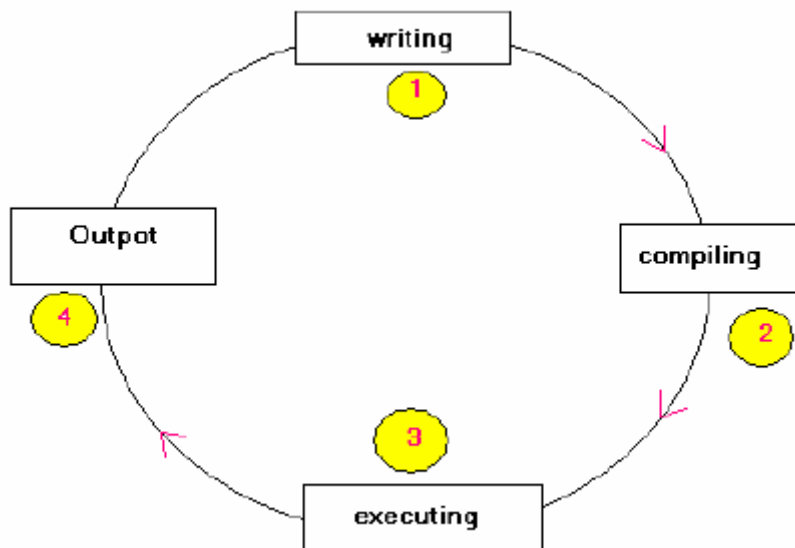
public	abstract	finally	boolean	return
float	break	short	for	Static
if	byte	case	implements	Super
catch	switch	import	char	int
synchronized	instanceof	this	class	Throw
continue	interface	default	long	else
throws	native	true	transient	New
do	package	double	null	try
private	extends	while	protected	Final
volatile	void	false	-----	-----

<==

:-

.executing

<== compiling



-:

code

```
1. public class Java
2. {
3. public static void main(String[] args)
4. {
5. System.out.println("welcome in my \n first program JAVA");
6. }
7. }
```

-:

```
welcome in my
first program JAVA
```

_____ \n
_____ .((_____))

if statement _____ :

((y _____ x _____))
((_____ \$10 _____))

-:

```
if (condition){
result
}
```

%60

%60

(())

..(())

```
int mark = 0;
if (mark<60){
System.out.println("the studant is faild");
}
if (mark>=60){
    System.out.println("the studant is succeded");
}
```

main syntax

integer

-:

int mark=0; .1

. variable

:_____

(())

_____ .2

60

..(()) 60

if...else _____ :

if statement

x

y

x

)

((z

```
if (condition){
result1 }
else{
result2 }
```

-: -

```
if (mark>=60){
System.out.println("passed exam");
}
else{
System.out.println("sorry! You are failed");
}
```

if...else

60

.((!))

if statement

.do....while :

loop

x))

.(y

```
Do{
result;
}while (condition);
```

-:

```
do{
System.out.println("you inter the correct number");
}while (x==5);
```

you enter the correct number

.5

while loop _____ :

500 (AL-Quds for us)

while loop

```
while (condition){
result;
}
```

-:

```
int c= 1 ;
While (c< = 500)
{
System.out.println ( " AL-Quds for us " );
c=c+1;
}
```

1
500

int c=1;

switch case :

if\else

```
switch (x){
case 1: { result .....
}
break;
case 1: { result .....
}
break;
..
.....
```

```
import javax.swing.*;
public class Main {
public static void main( String args[] ){
int month;
String input;
String name;
input = JOptionPane.showInputDialog("Enter the nuber of Month" );
month = Integer.parseInt( input );
switch ( month ){
case 1:name="janewary";break;
case 2:name="febrywary";break;
case 3:name="march";break;
case 4:name="aprail";break;
case 5:name="may";break;
case 6:name="jun";break;
case 7:name="julay";break;
case 8:name="augast";break;
case 9:name="september";break;
case 10:name="october";break;
```

```
case 11:name="november";break;
case 12:name="deceper";break;
default :name=" invalid Month number ";}
JOptionPane.showMessageDialog( null,"the Month is " + name ,"Class
Month", JOptionPane.INFORMATION_MESSAGE );
System.exit( 0 ); }}
```

```
class          box
.code          import javax.swing.*;
```

BufferedReader

```
JAVA          class          BufferedReader
          BufferedReader
```

```
BufferedReader in = new BufferedReader(new InputStreamReader
(System.in));
String input = in.readLine();
```

```
(*)          class          !!
.code          import java.io.*;
          classes
          .(( )) (( ))
```



```
import java.io.*;
class reader{
public static void main(String[] args)throws IOException{
int x;
String user;
BufferedReader in;
in = new BufferedReader(new InputStreamReader(System.in));
System.out.println("enter any number");
user = in.readLine();
x=Integer.parseInt(user);
if (x%2==0){
System.out.println ("the number is even");
}if (x%2!=0){
System.out.println ("the number is odd");
}}
}}
```

%

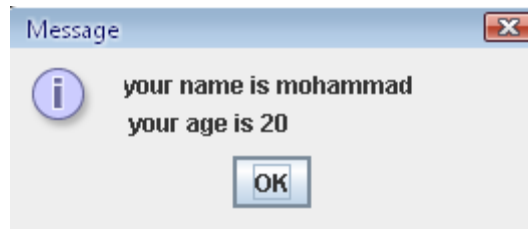
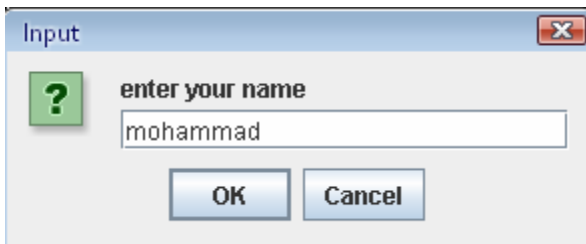
0	(4)	(2)	4%2=0		
(3)		3%2!=0	.	(!)	
				.(0)	(2)

.BufferedReader

:

. javax.swing class

```
import javax.swing.*;
public class Java {
public static void main (String[] args) {
String x;
String y;
x=JOptionPane.showInputDialog("Enter your name");
y= JOptionPane.showInputDialog("Enter your age");
JOptionPane.showMessageDialog(null, "your name is"+ " " + x + "\n
your age is"+ " " +y);
}}
```

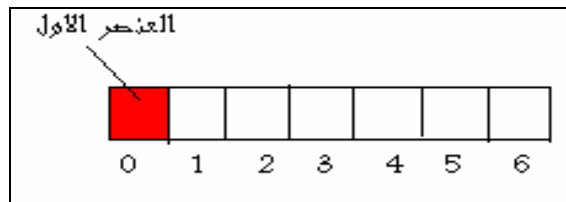


+" "+

المصفوفة Array

data type string integer
declaration
index

.(())



```
int [] x = new int[5];    \ type of array ((Integer)).  
String [] = new String [10];    \ type of array ((String)).
```

.
-:

7	6	5	4	3	2	1	

```
import javax.swing.*;
class days{
public static void main (String[]args){
int[] num;
String [] day;
String in = JOptionPane.showMessageDialog("Enter # of day");
int size = Integer.parseInt (in);
num = new int [size];
day =new String [size];
for (int i=0; i<num.length; i++){

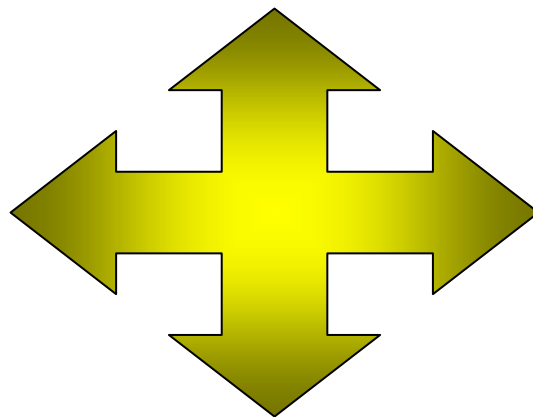
day [i] = JOptionPane.showMessageDialog("Enter name of day");
input = JOptionPane.showMessageDialog("Enter # of day");
num [i] = Integer.parseInt(input);
}}
}
```



- .1 .7amoda :
- .2 String main method
- .3 . public static void main (String[]args){ .
if statement
- :

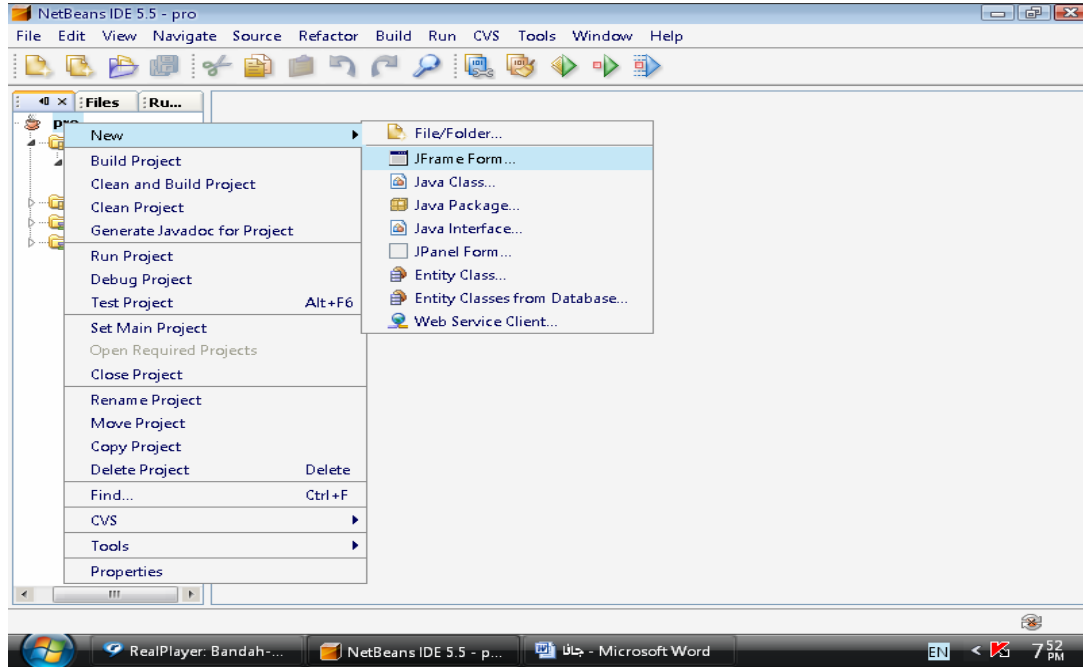
```
if (x==0){  
}  
System.out.println("hello");
```

- hello
- .4 / x
- .((initialization)) x
- .5 praises

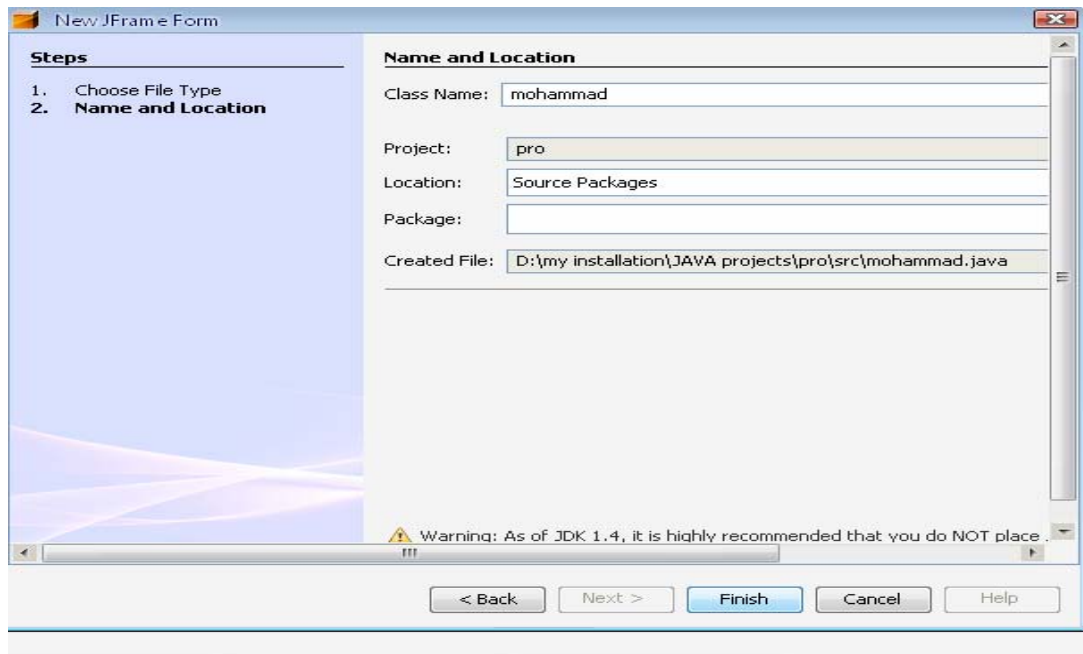


Netbeanse IDE

frames :



frames :

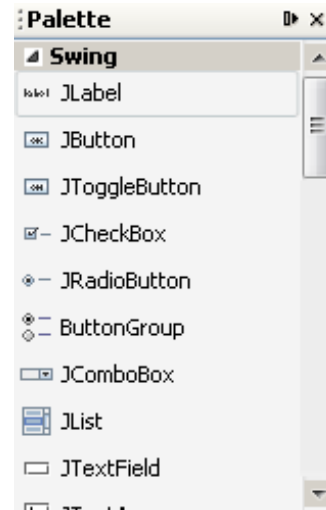


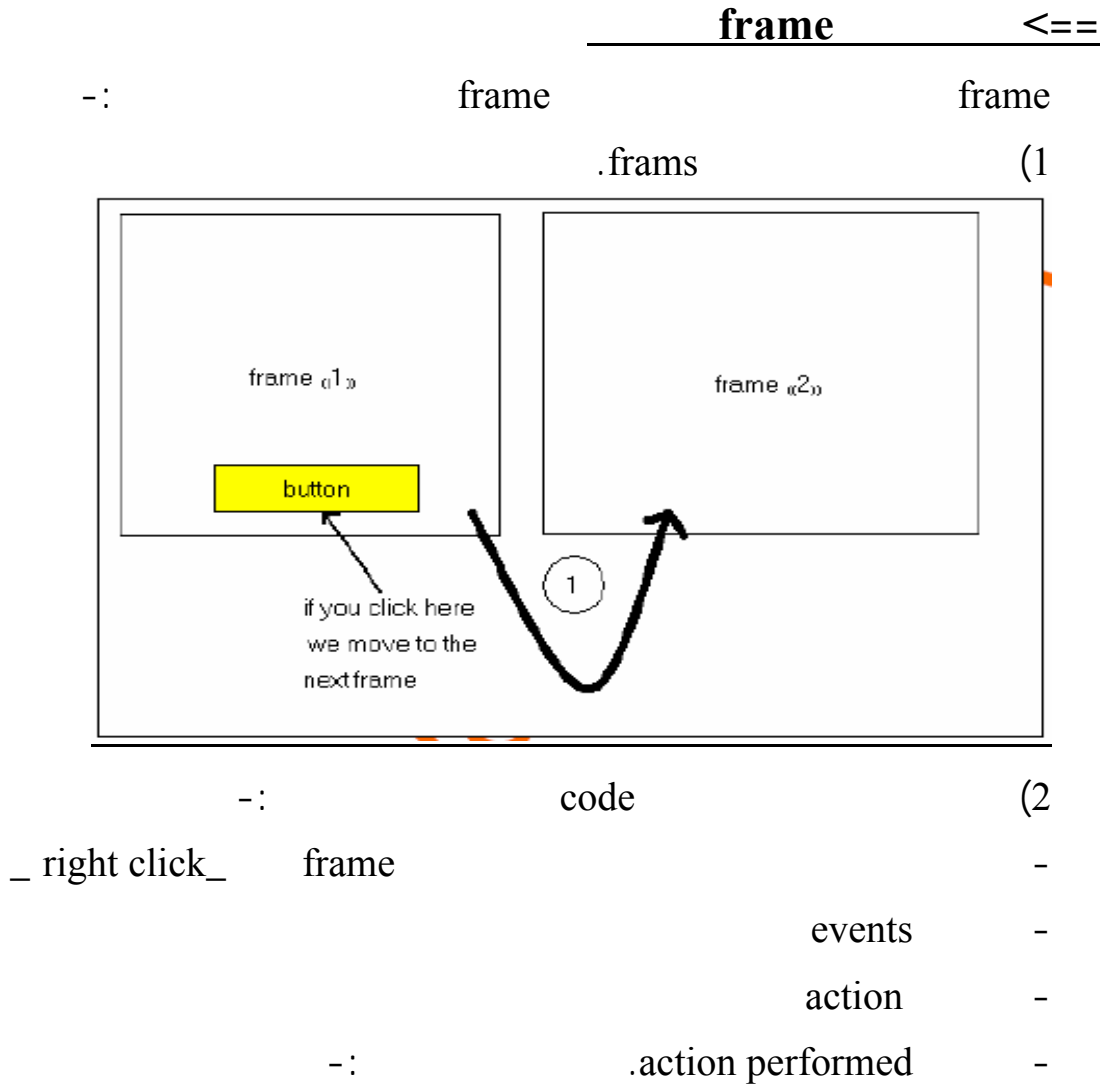


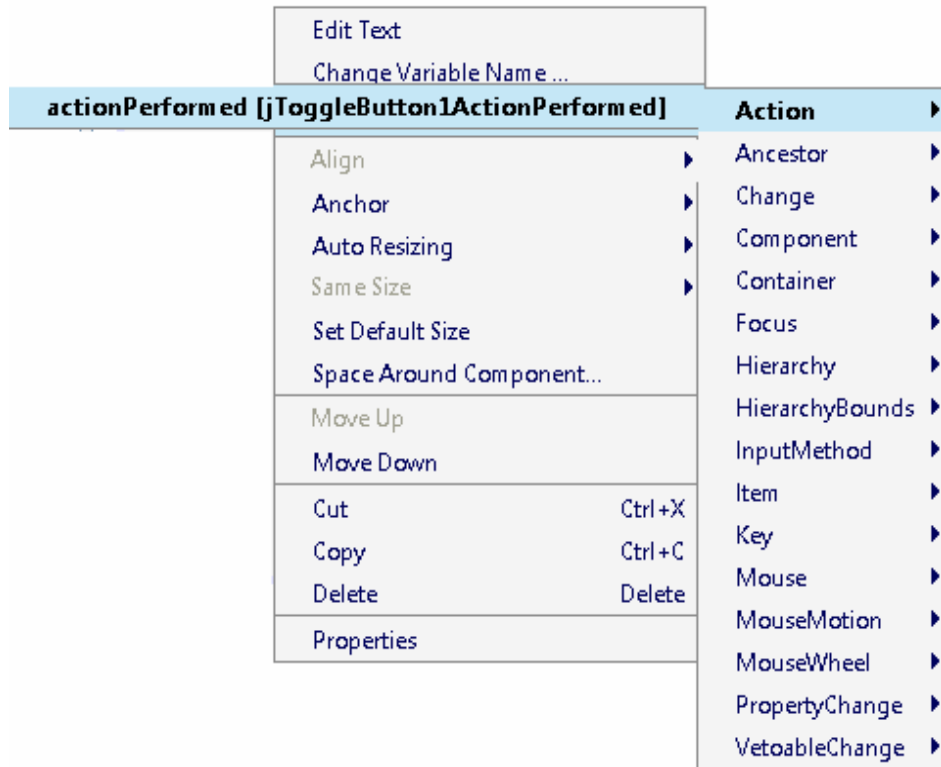
(())

رسم الملصق label
رسم الأزرار
رسم الأزرار
رسم check button

هناك الكثير من الأدوات







(3)

```
private void jToggleButtonActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
}
```

-:

```
info D = new info();
D.show();
```

. show .frame info

frame

code code

```
System.exit(0)
```

Principles of JAVA language

Made by

Mohammad Joudeh Hamayel
Al-Quds University – Computer Science



2008

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Introduction

The programming language is typed into three main parts the first call machine language, the second is assembly, and the third is call the high level language ((HLL)), JAVA is one of the third part.

The fast development in software world require developing the traditional language and translate it to the high level to comply with this development in this period.

JAVA language is to be distinguished by it work with all Operating System ((OS)) like windows XP, and it the twin of C++ language, both of them is presented by Sun Microsystem Company and it is a public language and inclusive to all of traditional languages.

The appearance of JAVA in 1990 lead to solve many problems such as the complication in C++ language, detain the memory, and increase the security level in computers and networks.

The development no happened to the computers and networks only but it happened in websites, java input the interface properties. JAVA used two kind of programs

1. JAVA Applet.
2. Stand-alone Application.

JAVA have many characteristic we can't take about it here , this is some of them. So we can start now.

introduction to programming

what is the program??

The program is set of instructions that orderly in a special form that can solve a limited problem.

Programming Steps

If we would write a program to solve a problem we should do these steps :

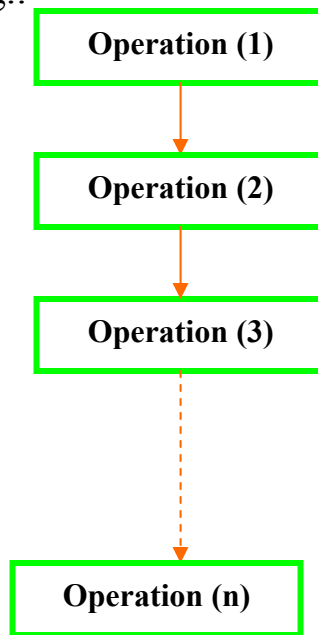
- Definition \ determined the problem.
- Write a special algorithm or flow chart.
- Dived the problem to a small sub-problem.

Programming Steps in JAVA

In JAVA and other high level language ((HLL)) you must draw the flow chart to your program to show all possibility which the program can produced it, or write the algorithm. So we have many logical ways to show all result of programs:-

1. The sequence

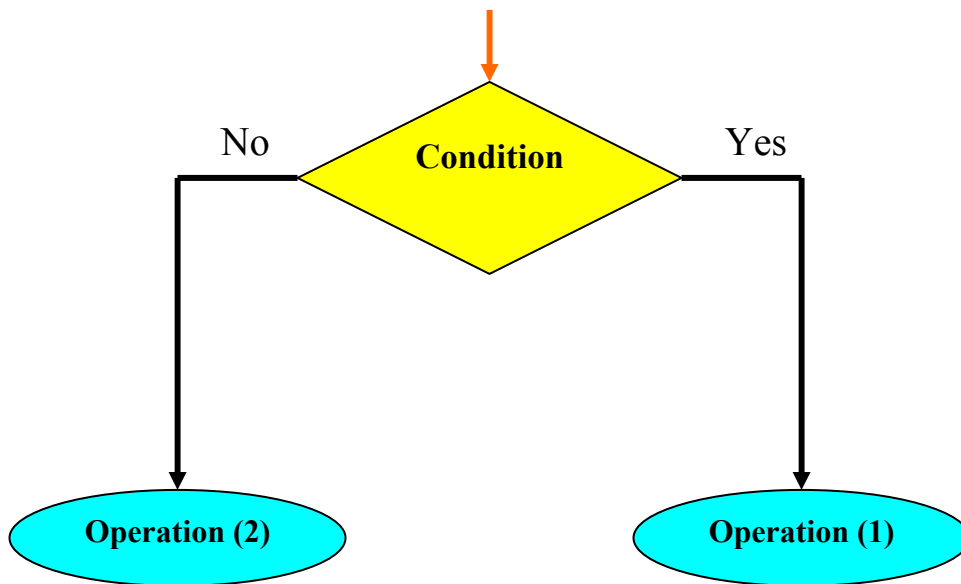
if the operation number (1) performed then all operation below will perform. Look the next fig.:-



The logical operation will sequenced from the first operation to the (n) operation, where (n) the last operation.

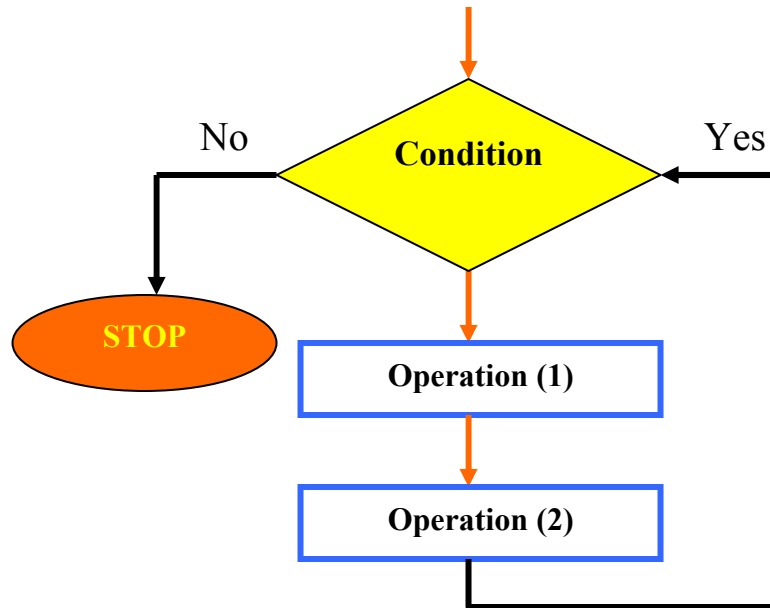
2. The selection

This operation walk in two ways if the condition (1) materialization then perform the operation (x), and if the condition (2) materialization then performed the operation (y). look to the next fig.



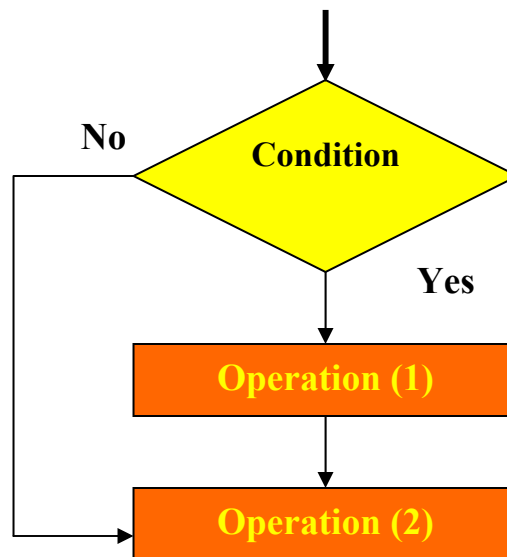
3. looping

in this operation if the condition (1) materialization then the program perform the next operations, and if it not performs then the program way log off from the loop. Look to the next fig.



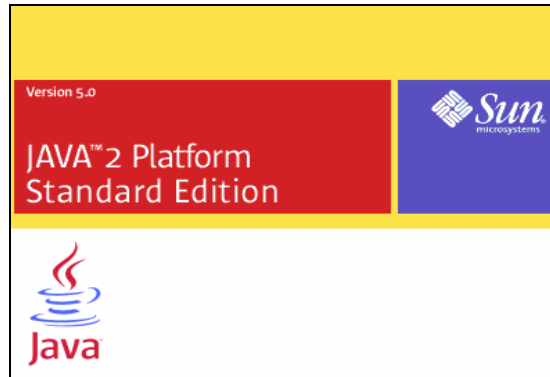
4. the branching

in this case if condition (1) performed then do the operation (a) and if condition (2) performed then performed operation (2). Look to the next fig.



What we need to start???

In the beginning we need compiler to compile the written programs from us. The installation is too much easy, it can be installed like the other program. But we need SETUP file. We can download this file from the industrialized company from this link <http://www.java.sun.com> . here some photo from the operation of installation.



The symbol & variable

1) some special symbols and mathematical in JAVA

No.	Symbol	Operation
1.	+	Addition
2.	-	Subtraction
3.	*	Multiplication
4.		Or
5.	&	And
6.	!	Not
7.	%	reminder
8.	/	division

2) Data type

No.	Data type	Size \ bite
1.	Integer	16
2.	Double	64
3.	Float	32
4.	Char	8
5.	Boolean	True \ false
6.	String	*****

3) brevity rest

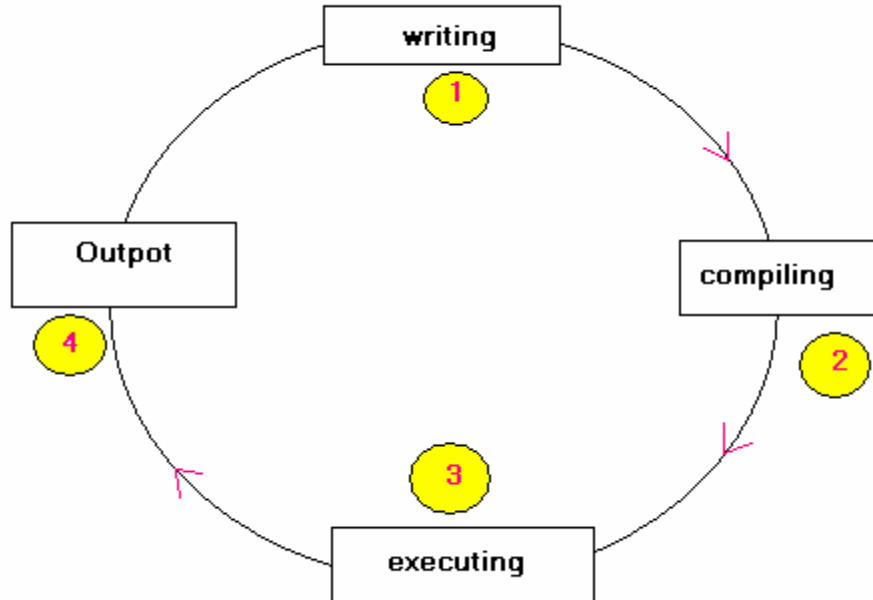
No.	abbreviation	Operation
1.	\n	New Line
2.	\t	Tab
3.	\"	Double quote
4.	\'	Single quote
5.	\b	Back space
6.	\f	Form feed

4) reserved words in JAVA

public	abstract	finally	Boolean	return
float	break	short	for	Static
if	byte	case	implements	Super
catch	switch	import	char	int
synchronized	instanceof	this	class	Throw
continue	interface	default	long	else
throws	native	true	transient	New
do	package	double	null	try
private	extends	while	protected	Final
volatile	void	false	-----	-----

The building program flow in three stages

- 1) writing code.
- 2) Compiling.
- 3) Execution.
- 4) Give output.



After we know these information. Let us learn about the syntax of JAVA programming.

The main syntax of JAVA

JAVA contain classes call main class and main method the definition of main method is **public static void main(String[] args){** and we can build many classes in on program. See this syntax

```
public class Java { // main class
public static void main(String[] args){ // main method
body of code program
}
}
```

Note that the main class & main method have start and have end , by braise {}.

Your first program in JAVA

```
1. public class Java
2. {
3. public static void main(String[] args)
4. {
5. System.out.println("welcome in my first program in JAVA");
6. }
7. }
```

what is the output from the previous program.

the output is **welcome in my first program in JAVA** .

we know that line ((1)) call main class and line ((2)) it start and line ((3)) call the main method and line ((4)) its start but line ((5)) this statement call ((print statement)) {System.out.println} and the statement welcome in my first program in JAVA is the output, line ((6)) is the end of main method and line ((7)) the end of main class.

If we add ((\n)) in this code what is the output??

```
1. public class Java
2. {
3. public static void main(String[] args)
4. {
5. System.out.println("welcome in my \n first program JAVA");
6. }
7. }
```

The output is:

```
welcome in my  
first program JAVA
```

we know that the symbol \n make a new line

The conditional statements

1) if statement

if the condition ((x)) is materialized then the result ((y)) is materialized. Example: if you have 100\$ then you can buy a new trouser. This is the principle of if statement in java language. See the syntax of this statement:-

```
if (condition){  
    result  
}
```

see the next example in JAVA ((example1))

```
if (mark<60){  
    System.out.println("the student is failed");  
  
if (mark>=60){  
    System.out.println("the student is succeeded ");  
}
```

what the previous program do??

You have two conditional statements the first show that if you mark is more than 60% the program print ((**the student is succeeded**)), and if he have mark less than 60% the program print ((**the student is failed**)).

Note that the compiler doesn't understand the number 5 or 6 etc, you must determined it's type and stored it in variable. For example:

```
int x = 5;  
double z = 10.0;
```

If else statement

if the condition ((x)) is materialized then the result ((y)) is materialized. And if condition ((x)) doesn't materialized then the result ((z)) materialized, Example: if you have 50\$ then you can buy a new trouser. And if you haven't 50\$ then you must collect more. This is the principle of if else in java language. See the syntax of this statement:-

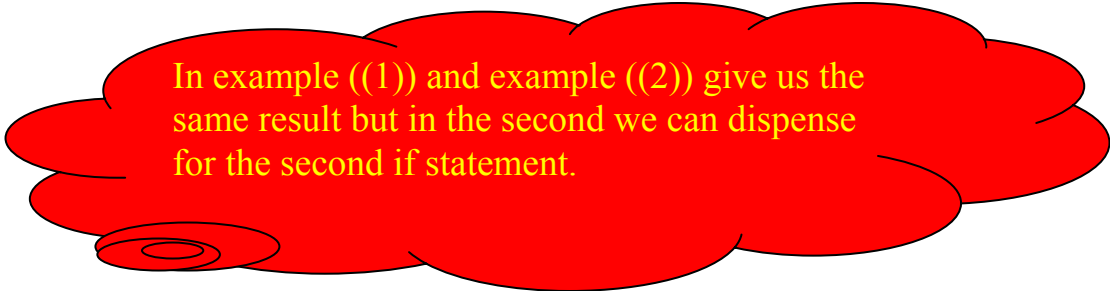
```
if (condition){  
result1 }  
else{  
result2 }
```

See the next example in JAVA ((example2))

```
if (mark>=60){  
System.out.println("passed exam");  
}  
else{  
System.out.println("sorry! You are failed");  
}
```

what the previous example do???

The previous example tell you if your mark is more than 60% or more the program print ((pass exam)) and if you have less than 60%. The program print ((sorry! You are failed)).



In example ((1)) and example ((2)) give us the same result but in the second we can dispense for the second if statement.

The compulsory statement ((do while))

We can call this statement the closed loop, in a different meaning you can't log out from the loop before the condition is materialized for example: buy a new pen while you have 10\$. See the main syntax of the statement:-

```
Do{
result;
}while (condition);
```

see the next example

```
do{
System.out.println("you inter the correct number");
}while (x==5);
```

what the previous sub-program do???

The program ask the use for enter any number if the enterer number is equal ((5)). Then the program print ((**you inter the correct number**)).

Repeatedly statement ((while loop))

imagine that you should have write the statement ((the name of Allah)) 500 times. Of course you can!! But how many time you spend to do that. So JAVA doesn't forget this problem. Now see the main syntax of the statement:-

```
while (condition){  
result;  
}
```

to solve the previous problem see the next program.

```
public static void main(String[] args) {  
int c= 1 ;  
while ( c <= 10){  
System.out.println ( " the name of Allah" );  
c=c+1;  
}  
}
```

Of course you see the new thing hear.

So give me your attention to understand the program. we defined a counter carry the name ((c)) and have an initial value ((1)). Then the condition said if the counter arrive ((10)) then print the name of Allah. c=c+1; mean increase the counter once.

Switch case statement

It used to the many chosen operation and it like if...else statement in it's options. See the syntax of it.

```
switch (x){
case 1: { result .....
}
break;
case 1: { result .....
}
break;
..
.....
```

See the next example to understand the idea.

```
import javax.swing.*;
public class Main {
public static void main( String args[] ){
int month;
String input;
String name;
input = JOptionPane.showInputDialog("Enter the nuber of Month" );
month = Integer.parseInt( input );
switch ( month ){
case 1:name="janewary";break;
case 2:name="febrywary";break;
case 3:name="march";break;
case 4:name="aprail";break;
case 5:name="may";break;
case 6:name="jun";break;
case 7:name="julay";break;
case 8:name="augast";break;
case 9:name="september";break;
case 10:name="october";break;
case 11:name="november";break;
case 12:name="deceper";break;
default :name=" invalid Month number ";}
JOptionPane.showMessageDialog( null,"the Month is " + name ,"Class Month",
JOptionPane.INFORMATION_MESSAGE );
System.exit( 0 );
}
}
```


What the previous program do???

The previous program tell the user to input the number of the month and the program tell you what is the name of it. By using JOption tools by import the package call `javax.swing.*`; the symbol `(.*)` mean import all the package.

What is BufferedReader ???

The BufferedReader used to read data from user and from file. The BufferedReader is a class in netbeans IDE. So see the main syntax of it.

```
BufferedReader in = new BufferedReader(new InputStreamReader
(System.in));
String input = in.readLine();
```

In the first you must import the class call `java.io.*`; and the symbol `(.*)` mean import all the classes of BufferedReader. See the next example about BufferedReader.

```
import java.io.*;
class reader {
public static void main(String[] args) throws IOException {
int x;
String user;
BufferedReader in;
in = new BufferedReader(new InputStreamReader(System.in));
System.out.println("enter any number");
user = in.readLine();
x=Integer.parseInt(user);
if (x%2==0){
System.out.println ("the number is even");
}if (x%2!=0){
System.out.println ("the number is odd");
}}
}}
```

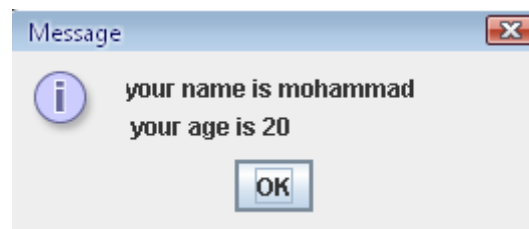
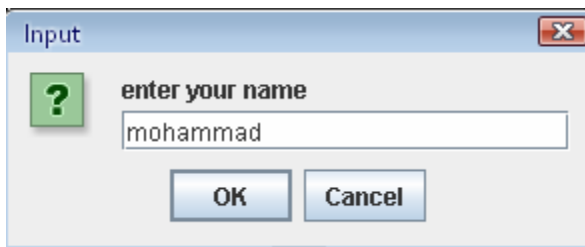
what the previous example do???

The previous example test that if the number is even OR odd. **How we can examine it?** By multiply the number in 2. if the number have a reminder (0) it mean the number is even. And if it have a reminder accept (0) it mean the number is odd. The symbol of the reminder is ((%)).

JOptionPane ((boxes))

If you would take the useful from this tools you must import **JOptionPane.***; package this tool is too much important and amazing. See the next example.

```
Import javax.swing.*;
public class Java{
public static void main (String[]args){
String x;
String y;
x=JOptionPane.showInputDialog("Enter your name");
y= JOptionPane.showInputDialog("Enter your age");
JOptionPane.MessageInputDialog(null,"your name is"+" "+ x +
"\n your age is"+" "+y);
}}
```



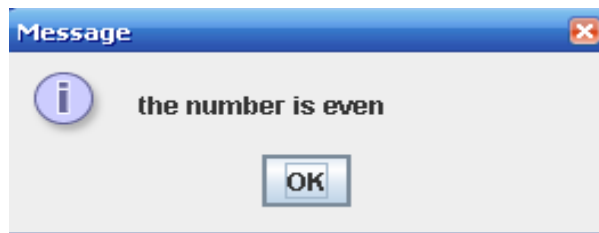
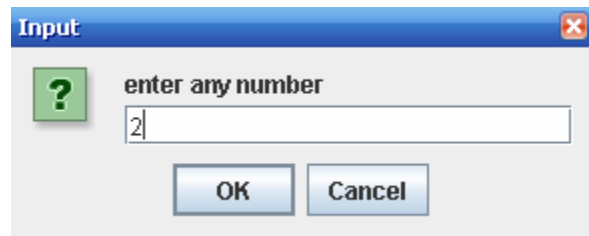
what the previous example do??

The previous example tell the user to add his name in the box and his age in other box then show the name and age in third box.

Other examples

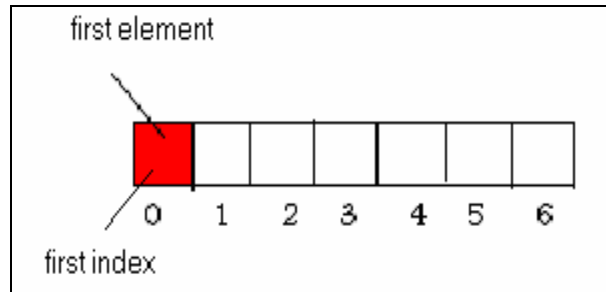
1. Test the number ((even)) or ((odd))

```
import javax.swing.*;
public class {
public static void main(String[] args) {
int x = 0;
JOptionPane.showInputDialog("enter any number");
if (x%2==0){
JOptionPane.showMessageDialog(null, "the number is even");
}
else {
JOptionPane.showMessageDialog(null, "the number is odd");
}
}
}
```



Array

JAVA used array technical like C++ and other languages. Array contain set of elements and it the same data type. And it has a limiting size. You can make decelerate for it and it have a locations it call index. The first index carry the number ((0)).



Array definition

to defined array you should defined it type and defined it size see the next:-

```
int [] x = new int[5];    \ \ type of array ((Integer)).  
String [] = new String [10]; \ \ type of array ((String)).
```

The next program to fill the array by the user by the name of day and number of day like the next table:-

No.	1	2	3	4	5	6	7
Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday

See the code

```
import javax.swing.*;
class days{
public static void main (String[]args){
int[] num;
String [] day;
String in = JOptionPane.showMessageDialog("Enter # of day");
int size = Integer.parseInt (in);
num = new int [size];
day =new String [size];
for (int i=0; i<num.length; i++){

day [i] = JOptionPane.showMessageDialog("Enter name of day");
input = JOptionPane.showMessageDialog("Enter # of day");
num [i] = Integer.parseInt(input);
}}
}
```

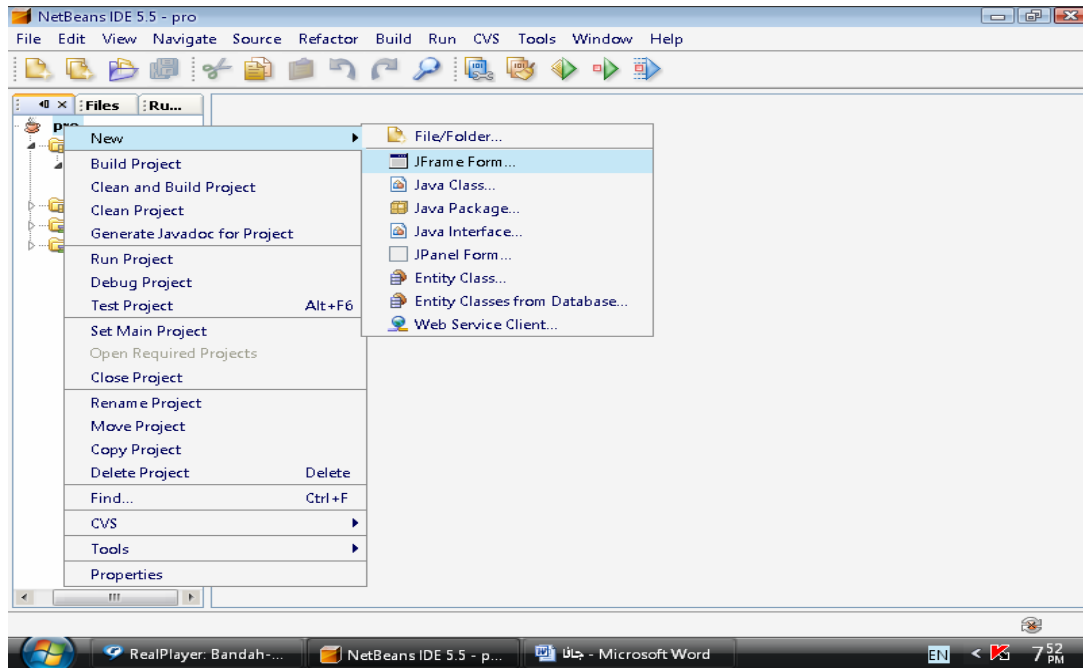
The current wrongs in JAVA

1. write the name of class by start in number, like 7amoda.
2. you must write the main class and subject to write the capital letter for example:- public static void main (**S**tring[]args){
3. in if statement you should write the result which you would show it in side prais.

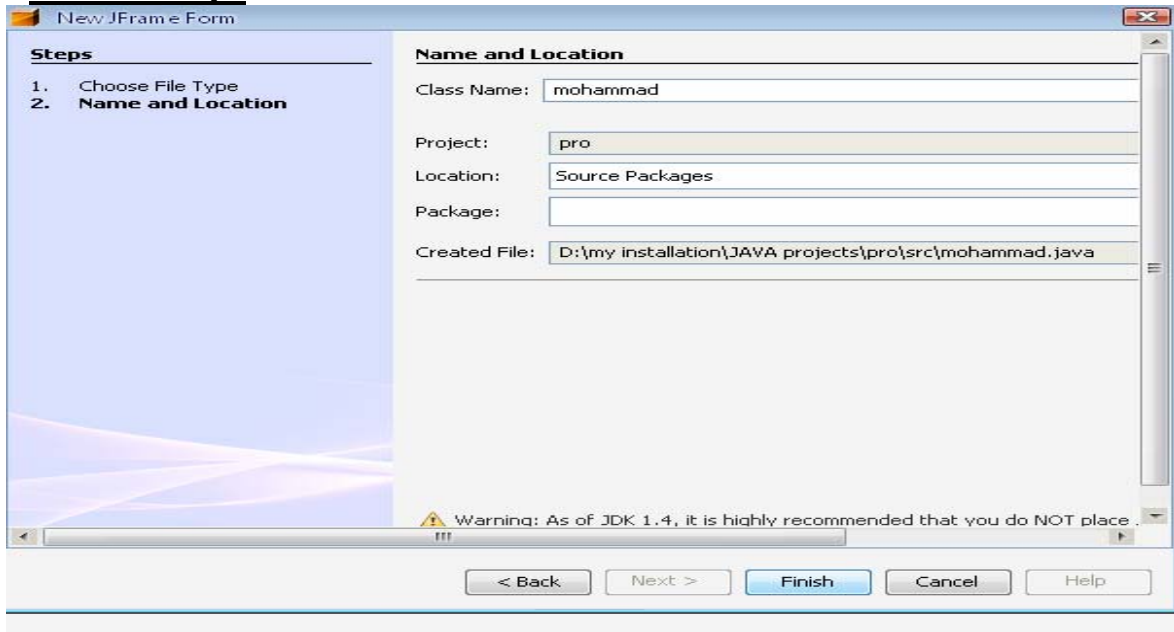
```
if (x==0){
}
System.out.println("hello");
```

4. doesn't given initial value of the variable ((y)) in loop operation.
5. the most important error is open and close prais. Because it doesn't give you what you expect.

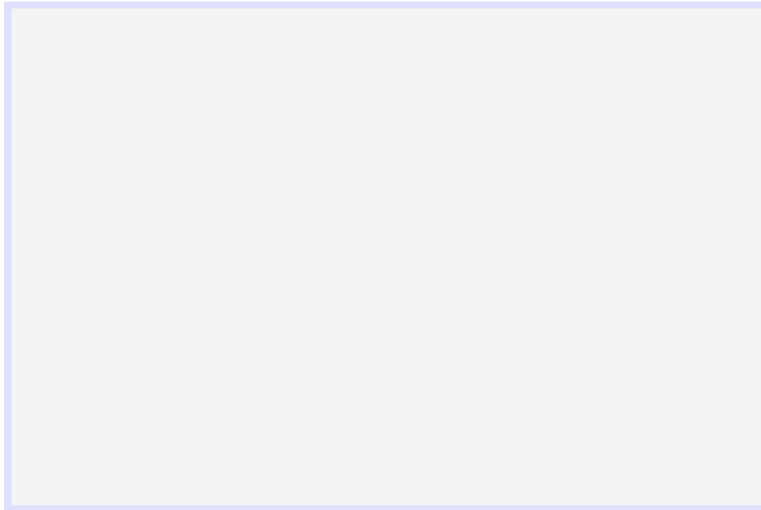
drawing and design projects in java first steps : establish the frames.



Second steps: determined the name of frame.

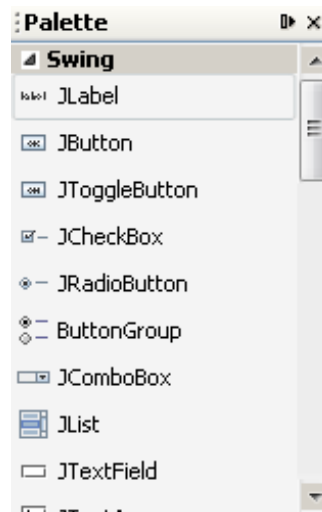


Third steps: this empty window is appeared



Draw place ((fig. a-1))

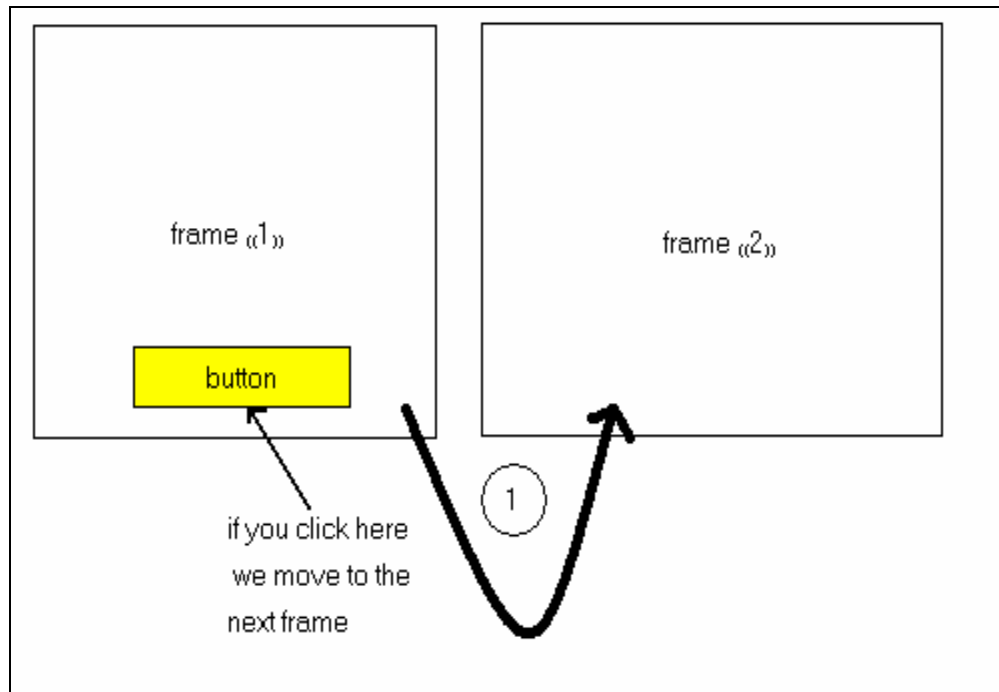
see the draw box.



To draw the form which you require click to it then click to the draw place.

Moving from frame to another frame.

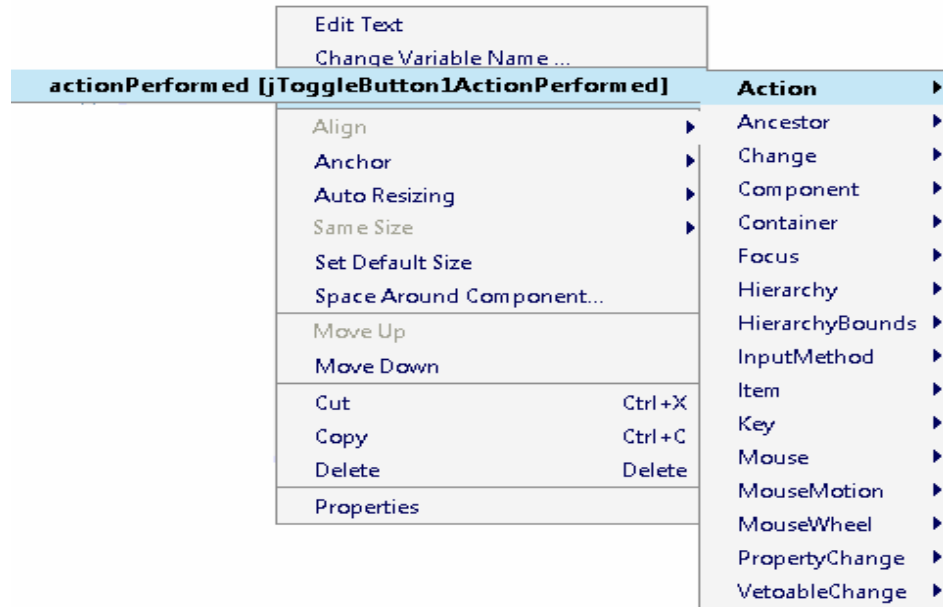
When you establish the frame you must name it then you create button to join to another frame. See the next plan to understand the idea.



now you must the code to finish this operation. See the code follow this steps to show the code place and write it.

1. click write click on the button.
2. choose events from list.
3. choose action.
4. choose action performed.

See the figuration bellow.



Then this window is show call code place

```
private void jToggleButtonActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
}
```

Now you can write this code:-

```
info D = new info();
D.show();
```

Where info is the name of frame and is variable ((programmer choice)).

Clouse frame

To close the frame only add this code

```
System.exit(0);
```