**ARRAYLIST**

**package** coding;

**public** **class** array {

**public** **static** **void** main(String[] args) {

// Declare and initialize an array of integers

**int**[] numbers = { 10, 20, 30, 40, 50 };

// Accessing array elements using index

System.***out***.println("Element at index 0: " + numbers[0]); // prints 10

System.***out***.println("Element at index 2: " + numbers[2]); // prints 30

// Modifying array elements

numbers[3] = 45;

// Iterating through an array using a for loop

System.***out***.println("Array elements:");

**for** (**int** i = 0; i < numbers.length; i++) {

System.***out***.println("Element at index " + i + ": " + numbers[i]);

}

// Enhanced for loop (for-each loop) to iterate through an array

System.***out***.println("Array elements (enhanced for loop):");

**for** (**int** num : numbers) {

System.***out***.println(num);

}

}

}

OUTPUT:

Array elements (enhanced for loop):

10

20

30

45

50

**DATATYPES**

**public** **class** datatypes {

**public** **static** **void** main(String[] args) {

//Boolean

**boolean** fruits = **true**;

**boolean** vegetables = **false**;

System.***out***.println("boolean=" + fruits);

//INTEGER

**int** myNum = 6+11;

System.***out***.println("int=" + myNum);

// FLOAT

**float** myFloatNum = 5.99892f;

System.***out***.println("float=" + myFloatNum);

// CHARACTER

**char** Grade = 'A';

System.***out***.println("char=" + Grade);

// STRING

String Text = "welcome to java programming";

System.***out***.println("String=" + Text);

//SHORT

**short** value;

value=50;

System.***out***.println("short=" + value);

//LONG

**long** numbers = 9876443256778L;

System.***out***.println("long=" + numbers);

//DOUBLE

**double** tele = 987.88d;

System.***out***.println("double=" + tele);

}

}

OUTPUT:

boolean=true

int=17

float=5.99892

char=A

String=welcome to java programming

short=50

long=9876443256778

double=987.88

**FORLOOP**

**public** **class** forloop {

**public** **static** **void** main(String[] args) {

//for loop

**int** i;

**for**(i=0;i<5;i++) {

System.***out***.println(i);

}

//inner and outer loop

**for** (**int** a = 1; a <= 2; a++) { // Outer loop

System.***out***.println("Outer: " + a);

**for** (**int** j = 1; j < 4; j++) { // Inner loop

System.***out***.println("Inner: " + j);

}

}

}

}

OUTPUT:

0

1

2

3

4

Outer: 1

Inner: 1

Inner: 2

Inner: 3

Outer: 2

Inner: 1

Inner: 2

Inner: 3

**MULTIDIMENSIONAL**

**public** **class** multidimensional {

**public** **static** **void** main(String[] args) {

**int**[][] text ={{1,2,3,4},{5,6,7},{8,9,10}};

**int** i;

**int** j;

**for**(i=0;i<text.length;i++) {

**for**(j=0;j< text[i].length;j++) {

System.***out***.println(text[i][j]);

}

}

}

}

OUTPUT:

1

2

3

4

5

6

7

8

9

10

**OPERATORS**

**public** **class** oprators {

**public** **static** **void** main(String[] args) {

**int** num1 = 20;

**int** num2 = 6;

// Addition

**int** sum = num1 + num2;

System.***out***.println("Sum of two no's: " + sum);

// Subtraction

**int** difference = num1 - num2;

System.***out***.println("Difference of two no's: " + difference);

**int** a=15;

**int** b=8;

**double** c=9.66;

// Multiplication

**double** product = a \* b \* c;

System.***out***.println("Product of three no's: " + product);

**int** x=45;

**int** y=5;

// Division

**int** quotient = x / y;

System.***out***.println("Quotient of two no's: " + quotient);

// Modulus (remainder)

**int** remainder = x % y;

System.***out***.println("Remainder of two no's: " + remainder);

// Increment and Decrement

**int** h = 7;

h++; // Increment by 1 (post)

++h;//(pre)

System.***out***.println("Incremented: " + h);

**int** g = 12;

g--; // Decrement by 1(post)

--g;//(pre)

System.***out***.println("Decremented: " + g);

// Relational Operators

**boolean** isEqual = num1 == num2;

System.***out***.println("Equal: " + isEqual);

**boolean** isNotEqual = num1 != num2;

System.***out***.println("Not Equal: " + isNotEqual);

**boolean** isGreater = num1 > num2;

System.***out***.println("Greater: " + isGreater);

**boolean** isLess = num1 < num2;

System.***out***.println("Less: " + isLess);

// Logical Operators

**boolean** logicalAnd = (num1 < 0) && (num2 > 0);

System.***out***.println("Logical AND: " + logicalAnd);

**boolean** logicalOr = (num1 > 0) || (num2 < 0);

System.***out***.println("Logical OR: " + logicalOr);

**boolean** logicalNot = !(num1 < 0);

System.***out***.println("Logical NOT: " + logicalNot);

}

}

OUTPUT:

Sum of two no's: 26

Difference of two no's: 14

Product of three no's: 1159.2

Quotient of two no's: 9

Remainder of two no's: 0

Incremented: 9

Decremented: 10

Equal: false

Not Equal: true

Greater: true

Less: false

Logical AND: false

Logical OR: true

Logical NOT: true

**IFSTATEMENT**

**public** **class** statements {

**public** **static** **void** main(String[] args) {

**int** num=10;

//ifstatement

**if**(num<15) {

System.***out***.println("number less than 15");

}

//ifelse

**int** x=20;

**int** y=10;

**int** z;

z=x+y;

**if**(z>15) {

System.***out***.println("good");

} **else**{

System.***out***.println("bad");

}

//elseif

**int** score = 85;

**if** (score >= 90) {

System.***out***.println("Grade: A");

} **else** **if** (score <= 80) {

System.***out***.println("Grade: B");

} **else** **if** (score >= 70) {

System.***out***.println("Grade: C");

} **else** **if** (score >= 60) {

System.***out***.println("Grade: D");

} **else** {

System.***out***.println("Grade: F");

}

//nestedif

**int** stockQuantity = 10;

**int** customerAge = 25;

**if** (stockQuantity > 0) {

**if** (customerAge >= 18) {

System.***out***.println("Product is available. You can purchase.");

} **else** {

System.***out***.println("Product is not available for customers under 18.");

}

} **else** {

System.***out***.println("Product is out of stock.");

}

}

}

OUTPUT:

number less than 15

good

Grade: C

Product is available. You can purchase.

**SWITCHCASE**

**public** **class** switchcase {

**public** **static** **void** main(String[] args) {

**int** text = 3;

**switch** (text) {

**case** 1:

System.***out***.println("Hello World!");

**break**;

**case** 2:

System.***out***.println("Nature is so good!");

**break**;

**case** 3:

System.***out***.println("Goodbye!");

**break**;

**default**:

System.***out***.println("Invalid choice");

}

}

}

OUTPUT:

Goodbye!

**SWITCHSCANNER**

**import** java.util.Scanner;

**public** **class** switchscanner {

**public** **static** **void** main(String[] args) {

Scanner get = **new** Scanner(System.***in***);

System.***out***.println("Enter the no's:");

**int** choice = get.nextInt();

System.***out***.println("the no's is:" + choice);

System.***out***.println("Enter the name:");

String name = get.next();

System.***out***.println("the name is:" + name);

System.***out***.println(" Enter the Float is:" );

**float** y = get.nextFloat();

System.***out***.println("the float no's is" + y);

}

OUTPUT:

Enter the no's:

2

the no's is:2

Enter the name:

ANU

the name is:ANU

Enter the Float is:

5.5

the float no's is5.5

**WHILELOOP**

**public** **class** whileloop {

**public** **static** **void** main(String[] args) {

**int** a = 1;

System.***out***.println("while loop");

**while** (a <= 5) {

System.***out***.println(a);

a++;

}

**int** count = 0;

System.***out***.println("do-while loop:");

**do** {

System.***out***.println(count);

count++;

} **while** (count < 5);

}

}

OUTPUT:

while loop

1

2

3

4

5

do-while loop:

0

1

2

3

4

**ENCAPSULATION**

**public** **class** Student {

**private** String name;

**private** **int** age;

**private** String studentID;

// Getter methods

**public** String getName() {

**return** name;

}

**public** **int** getAge() {

**return** age;

}

**public** String getStudentID() {

**return** studentID;

}

// Setter methods

**public** **void** setName(String name) {

**this**.name = name;

}

**public** **void** setAge(**int** age) {

**if** (age > 0) {

**this**.age = age;

}

}

**public** **void** setStudentID(String studentID) {

**this**.studentID = studentID;

}

**public** **static** **void** main(String[] args) {

// Creating a Student object using encapsulation

Student d = **new** Student();

d.setName("Divya");

d.setAge(22);

d.setStudentID("789012");

System.***out***.println("Name: " + d.getName());

System.***out***.println("Age: " + d.getAge());

System.***out***.println("Student ID: " + d.getStudentID());

}

}

OUTPUT:

Name: Divya

Age: 22

Student ID: 789012

**MULTIPLEINHERITANCE**

**class** Computer {

**void** powerOn() {

System.***out***.println("Computer is powering on.");

}

}

**class** Laptop **extends** Computer {

**void** openLid() {

System.***out***.println("Laptop lid is opened.");

}

}

**class** GamingLaptop **extends** Laptop {

**void** playGame() {

System.***out***.println("Gaming laptop is playing a game.");

}

}

**public** **class** Computer1{

**public** **static** **void** main(String[] args) {

GamingLaptop gamingLaptop = **new** GamingLaptop();

gamingLaptop.powerOn();

gamingLaptop.openLid();

gamingLaptop.playGame();

}

}

OUTPUT:

Computer is powering on.

Laptop lid is opened.

Gaming laptop is playing a game.

**POLYMORPHISM**

**class** Shape1 {

**public** **void** draw() {

System.***out***.println("Drawing a shape");

}

}

**class** Circle **extends** Shape1 {

@Override

**public** **void** draw() {

System.***out***.println("Drawing a circle");

}

}

**class** Square **extends** Shape1 {

@Override

**public** **void** draw() {

System.***out***.println("Drawing a square");

}

}

**public** **class** Shape {

**public** **static** **void** main(String[] args) {

Shape1 ta = **new** Shape1();

Shape1 del = **new** Circle();

Shape1 ex = **new** Square();

ta.draw();

del.draw(); // Calls the overridden draw() method in Circle class

ex.draw(); // Calls the overridden draw() method in Square class

}

}

OUTPUT:

Drawing a shape

Drawing a circle

Drawing a square

**ABSTRACT CLASS**

**abstract** **class** Operation1 {

**public** **abstract** **double** note(**double** operand1, **double** operand2);

}

// Concrete subclass for addition

**class** Addition **extends** Operation1 {

//Override

**public** **double** note(**double** operand1, **double** operand2) {

**return** operand1 + operand2;

}

}

// Concrete subclass for subtraction

**class** Subtraction **extends** Operation1 {

@Override

**public** **double** note(**double** operand1, **double** operand2) {

**return** operand1 - operand2;

}

}

// Concrete subclass for multiplication

**class** Multiplication **extends** Operation1 {

@Override

**public** **double** note(**double** operand1, **double** operand2) {

**return** operand1 \* operand2;

}

}

**public** **class** Operation {

**public** **static** **void** main(String[] args) {

**double** num1 = 10.0;

**double** num2 = 5.8;

Operation1 add = **new** Addition();

Operation1 subtract = **new** Subtraction();

Operation1 multiply = **new** Multiplication();

System.***out***.println("Addition result: " + add.note(num1, num2));

System.***out***.println("Subtraction result: " + subtract.note(num1, num2));

System.***out***.println("Multiplication result: " + multiply.note(num1, num2));

}

}

OUTPUT:

Addition result: 15.8

Subtraction result: 4.2

Multiplication result: 58.0