



- Array se better ArrayList

Array

- 1) fixed
- 2) no ready made support length
- 3) primitive & object
 - | - byte, short, int
 - long, float, double
 - char, boolean

ArrayList

- 1) size is not fixed
- 2) ready made support
add(), set(), remove(), contains()
size(), get(), ...
- 3) Objects



```
// wajp to demo ArrayList

import java.util.*;
class P1 {
public static void main(String args[]) {

ArrayList<Integer> d1 = new ArrayList<>();
System.out.println(d1);

// append --> add(ele)
d1.add(10);
d1.add(30);
d1.add(20);
d1.add(10);
d1.add(40);
d1.add(20);
System.out.println(d1);

// insert --> add(index, ele)
d1.add(1, 55);
System.out.println(d1);
```



```
File Edit View
// insert --> add(index, ele)
d1.add(1, 55);
System.out.println(d1);

// d1.add(10, 44); --> IOOBE

// replace --> set(index, ele)
d1.set(3, 99);
System.out.println(d1);

// remove(object)
d1.remove(Integer.valueOf(56));
System.out.println(d1);

// remove(index)
d1.remove(2);
System.out.println(d1);

System.out.println(d1.contains(55));
System.out.println(d1.size());
}
}
```



```
P2
File Edit View
// wajp to read ArrayList of String from user and display on screen

import java.io.*;
import java.util.*;
class P2 {
public static void main(String args[]) {
Console c = System.console();
ArrayList<String> names = new ArrayList<>();

String res = c.readLine("do u want to enter some names y/n ");
while(res.equals("y")) {
    String n = c.readLine("enter name ");
    names.add(n);
    res = c.readLine("do u want to enter more y/n ");
}
System.out.println(names);

for(int i=0; i < names.size(); i++)
}

```



The screenshot shows a mobile application window. At the top, it displays 'JA043_GAYATRI...' and 'JA043_GAYATRI_BAGUL_DMCE'. Below this is a list of three items, each consisting of a small circular profile picture and a name: 'Kamal Sir', 'JA021_SAGAR...', and 'JA033_Vishnu...'. The application has a dark theme with white text and icons.

```
P2  
File Edit View  
names.add(n);  
res = c.readLine("do u want to enter more y/n ");  
}  
  
// method 1  
System.out.println(names);  
  
// method 2  
for(int i=0; i < names.size(); i++)  
    System.out.print(names.get(i) + " ");  
System.out.println();  
  
// method 3  
for(String d : names)  
    System.out.print(d + " ");  
System.out.println();  
}
```



Ln 25 Col 12

90% Windows (CR/LF) UTF-8 14:51 Tue 06-06-2023

P3

File Edit View

```
// wajp to read ArrayList of numbers and print
// their sum and avg

import
import
class P3 {
public
    {
        Console c =
        ArrayList<Double> data =
            String res =
            while(res.equals("y")) {
                double d =
                    data.add(d);
                res =
            }

        double sum=0.0, avg=0.0;
```

JA043_GAYATRI...

X JA043_GAYATRI_BAGUL_DMCE



Kamal Sir

JA021_SAGAR...

X JA021_SAGAR_CHAVAN_TERNA

JA033_Vishnu...

X JA033_Vishnu_Nair_Terna

Ln 1, Col 1

100% Windows (CRLF) UTF-8

14:51 Tue 06-06-2023

P3

File Edit View

```
String res =  
while(res.equals("y")) {  
    double d =  
    data.add(d);  
    res =  
}  
  
double sum=0.0, avg=0.0;  
for()  
    sum =  
avg =  
  
System.  
System.  
}  
}  
  
Ln 18, Col 26
```

JA043_GAYATRI...
JA043_GAYATRI_BAGUL_DMCE
Kamal Sir

JA021_SAGAR_...
JA021_SAGAR_CHAVAN_TERNA

JA033_Vishnu_...
JA033_Vishnu_Nair_Terna

P3

File Edit View

```
String res =  
while(res.equals("y")) {  
    double d =  
    data.add(d);  
    res =  
}  
  
double sum=0.0, avg=0.0;  
for()  
    sum =  
avg =  
  
System.  
System.  
}  
}
```

JA043_GAYATRI...
JA043_GAYATRI_BAGUL_DMCE
Kamal Sir

JA021_SAGAR_...
JA021_SAGAR_CHAVAN_TERNA

JA033_Vishnu_...
JA033_Vishnu_Nair_Terna

The image shows a Windows desktop environment with two code editors open and a system tray at the bottom.

Code Editor 1 (Left):

```
// wajp to read ArrayList of numbers and print their sum and avg
import java.io.*;
import java.util.*;
class P3 {
    public static void main(String args[]) {
        Console c = System.console();
        ArrayList<Double> data = new ArrayList<>();
        String res = c.readLine("do u want to enter some numbers y/n ");
        while(res.equals("y")){
            double d = Double.parseDouble(c.readLine("enter number "));
            data.add(d);
            res = c.readLine("do u want to enter more y/n ");
        }
        double sum=0.0, avg=0.0;
        for(double d : data)
            sum = sum + d;
        avg = sum / data.size();
        System.out.println("sum = " + sum);
        System.out.println("avg = " + avg);
    }
}
```

Code Editor 2 (Right):

```
wop3
File Edit View
data = [3.6, 6, 2]
sum = sum + d
d
3.6      = 0.0 + 3.6 = 3.6
6        = 3.6 + 6.0 = 9.6
2        = 9.6 + 2 = 11.6
sum = 11.6
avg = sum / data.size()
11.6 / 3
=3.86
Talking:
```

System Tray:

- Search icon
- Volume icon
- Network connection icon
- Language icon: ENG IN
- Date and time: Tue, 06-06-2023 15:05

P4

File Edit View

```
// wajp to maintain list of frds attending bday party
```

```
import java.io.*;
import java.util.*;
class P4 {
public static void main(String args[]) {

Console c = System.console();
ArrayList<String> names = new ArrayList<>();

while(true)
{
    int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 see and 4 exit "));
    if (op == 1) {
        String n = c.readLine("enter name ");
        names.add(n);
    } else if (op == 2){
        // yeh aapko karna hain
    } else if (op == 3) {
        System.out.println(names);
    } else if (op == 4) {
        break;
    }
}
}
```

Kamal Sir

P4

File Edit View

```
// wajp to maintain list of frds attending bday party

import java.io.*;
import java.util.*;
class P4 {
public static void main(String args[]) {

Console c = System.console();
ArrayList<String> names = new ArrayList<>();

while(true)
{
    int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 see and 4 exit "));
    if (op == 1) {
        String n = c.readLine("enter name ");
        names.add(n);
    } else if (op == 2){
        // yeh aapko karna hain
    } else if (op == 3) {
        System.out.println(names);
    } else if (op == 4) {
        break;
    }
}
}

Kamal Sir
```

Ln 2, Col 1 90% Windows (CRLF) UTF-8

P4

File Edit View

```
{  
    int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 see and 4 exit "));  
    if (op == 1) {  
        String n = c.readLine("enter name ");  
        names.add(n);  
    } else if (op == 2){  
        // yeh aapko karna hain  
    } else if (op == 3) {  
        System.out.println(names);  
    } else if (op == 4) {  
        break;  
    } else {  
        System.out.println("sorry i dont understand ");  
    }  
}  
}
```



Kamal Sir



You are viewing Kamal Sir's screen. View Options

```
P4
File Edit View
ArrayList<String> names = new ArrayList<>();

while(true) {
    int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 see and 4 exit "));
    if (op == 1) {
        String n = c.readLine("enter name ");
        names.add(n);
    } else if (op == 2){
        String n = c.readLine("enter name ");
        if (names.contains(n))           names.remove(n);
        else                            System.out.println(n + " does not exists ");
    } else if (op == 3) {
        System.out.println(names);
    } else if (op == 4) {
        break;
    } else {
        System.out.println("sorry i dont understand ");
    }
}
```



PS

File Edit View

```
// wajp to implement DS: Stack / LIFO

import java.io.*;
import java.util.*;

class P5 {
    public static void main(String args[]) {
        Console c = System.console();
        ArrayList<Integer> stack = new ArrayList<>();

        while(true) {
            int op = Integer.parseInt(c.readLine("1 push, 2 pop, 3 show and 4 exit "));
            if (op == 1) {
                int ele = Integer.parseInt(c.readLine("enter element "));
                stack.add(ele);
            } else if (op == 2) {
                // aap ko karna hain
            } else if (op == 3) {
                System.out.println("stack = " + stack);
            } else if (op == 4) {
                break;
            }
        }
    }
}
```



Kamal Sir

PS

File Edit View

```
Console c = System.console();
ArrayList<Integer> stack = new ArrayList<>();

while(true) {
    int op = Integer.parseInt(c.readLine("1 push, 2 pop, 3 show and 4 exit "));
    if (op == 1) {
        int ele = Integer.parseInt(c.readLine("enter element "));
        stack.add(ele);
    } else if (op == 2) {
        // aap ko karna hain
    } else if (op == 3) {
        System.out.println("stack = " + stack);
    } else if (op == 4) {
        break;
    } else {
        System.out.println("sorry i dont understand");
    }
}

JA27_MANISHA_INGALE_SIKKIM UNI...
```

80% Windows (CRLF) UTF-8

Ln 28 Col 1

Search 33% ENG 15:41

PS

```
File Edit View
class P5 {
public static void main(String args[]) {
    Console c = System.console();
    ArrayList<Integer> stack = new ArrayList<>();

    while(true) {
        int op = Integer.parseInt(c.readLine("1 push, 2 pop, 3 show and 4 exit "));
        if (op == 1) {
            int ele = Integer.parseInt(c.readLine("enter element "));
            stack.add(ele);
        } else if (op == 2) {
            if (stack.size() == 0)
                System.out.println("stack is empty");
            else
                System.out.println("popped element = " + stack.remove(stack.size() - 1));
        } else if (op == 3) {
            System.out.println("stack = " + stack);
        } else if (op == 4) {
            break;
        } else {
            System.out.println("sorry i dont understand");
        }
    }
}

Ln 15, Col 23
```



Kamal Sir

P6

File Edit View

```
// wajp to implement DS : Queue / FIFO
import java.io.*;
import java.util.*;

class P6 {
    public static void main(String args[]) {
        Console c = System.console();
        ArrayList<Integer> queue = new ArrayList<>();

        while(true) {
            int op = Integer.parseInt(c.readLine("1 en, 2 de, 3 show and 4 exit "));
            if (op == 1) {
                int ele = Integer.parseInt(c.readLine("enter element "));
                queue.add(ele);
            } else if (op == 2) {
                // yeh aapko karna hain
            } else if (op == 3) {
                System.out.println("queue " + queue);
            } else if (op == 4) {
                break;
            } else {
                System.out.println("Please enter valid input");
            }
        }
    }
}
```

Kamal Sir

Ln 1, Col 1 80% Windows (CRLF) UTF-8

P6

File Edit View

```
while(true) {
    int op = Integer.parseInt(c.readLine("1 en, 2 de, 3 show and 4 exit "));
    if (op == 1) {
        int ele = Integer.parseInt(c.readLine("enter element "));
        queue.add(ele);
    } else if (op == 2) {
        // yeh aapko karna hain
    } else if (op == 3) {
        System.out.println("queue " + queue);
    } else if (op == 4) {
        break;
    } else {
        System.out.println("sorry i dont understand ");
    }
}
```

Kamal Sir

Ln 29, Col 1 80% Windows (CRLF) UTF-8

P6

```
File Edit View
import java.util.*;
class P6 {
public static void main(String args[]) {
    Console c = System.console();
    ArrayList<Integer> queue = new ArrayList<>();
    while(true) {
        int op = Integer.parseInt(c.readLine("1 en, 2 de, 3 show and 4 exit "));
        if (op == 1) {
            int ele = Integer.parseInt(c.readLine("enter element "));
            queue.add(ele);
        } else if (op == 2) {
            if (queue.size() == 0)
                System.out.println("queue is empty");
            else
                System.out.println("removed element = " + queue.remove(0));
        } else if (op == 3) {
            System.out.println("queue " + queue);
        } else if (op == 4) {
            break;
        } else {
            System.out.println("sorry i dont understand ");
        }
    }
}
```

Kamal Sir

P7

File Edit View



// wajp to demo set

```
import java.util.*;
class P7 {
public static void main(String args[]) {
    // unordered and unsorted
    HashSet<String> pp1 = new HashSet<>();
    pp1.add("bjp");
    pp1.add("aap");
    pp1.add("bjp");
    pp1.add("kp");
    pp1.add("sp");
    System.out.println(pp1);

    // ordered
    LinkedHashSet<String> pp2 = new LinkedHashSet<>();
    pp2.add("bjp");
    pp2.add("aap");
    pp2.add("bjp");
}
```

Ln 1, Col 1

90% Windows (CRLF) UTF-8

```
P7  
File Edit View  
// ordered  
LinkedHashSet<String> pp2 = new LinkedHashSet<>();  
pp2.add("bjp");  
pp2.add("aap");  
pp2.add("bjp");  
pp2.add("kp");  
pp2.add("sp");  
System.out.println(pp2);  
  
// sorted  
TreeSet<String> pp3 = new TreeSet<>();  
pp3.add("bjp");  
pp3.add("aap");  
pp3.add("bjp");  
pp3.add("kp");  
pp3.add("sp");  
System.out.println(pp3);  
}  
}
```

```
File Edit View  
// wajp to maintain the IPL team names  
  
import java.io.*;  
import java.util.*;  
  
class P8 {  
    public static void main(String args[]) {  
        Console c = System.console();  
        LinkedHashSet<String> names = new LinkedHashSet<>();  
  
        while(true)  
        {  
            int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 show and 4 exit "));  
            if (op == 1) {  
                String n = c.readLine("enter team name ");  
                if (names.add(n))  
                    System.out.println(n + " added ");  
                else  
                    System.out.println(n + " already present ");  
            } else if (op == 2) {  
                System.out.println("remove operation not yet implemented");  
            } else if (op == 3) {  
                System.out.println("team names are ");  
                for (String name : names)  
                    System.out.println(name);  
            } else if (op == 4) {  
                System.out.println("exit operation not yet implemented");  
                break;  
            } else {  
                System.out.println("invalid option selected");  
            }  
        }  
    }  
}
```



P8

```
File Edit View
if (op == 1) {
    String n = c.readLine("enter team name ");
    if (names.add(n))
        System.out.println(n + " added ");
    else
        System.out.println(n + " already present ");

} else if (op == 2) {
    // yeh aapko karna hain
} else if (op == 3) {
    System.out.println(names);
} else if (op == 4) {
    break;
} else {
    System.out.println("sorry i dont understand ");
}
}
```



P8

```
File Edit View
int op = Integer.parseInt(c.readLine("1 add, 2 remove, 3 show and 4 exit"));
if (op == 1) {
    String n = c.readLine("enter team name ");
    if (names.add(n))
        System.out.println(n + " added ");
    else
        System.out.println(n + " already present ");

} else if (op == 2) {
    // yeh aapko karna hain
} else if (op == 3) {
    System.out.println(names);
} else if (op == 4) {
    break;
} else {
    System.out.println("sorry i dont understand ");
}
}
```



P8

```
File Edit View
if (op == 1) {
    String n = c.readLine("enter team name ");
    if (names.add(n)) // true --> added else false
        System.out.println(n + " added ");
    else
        System.out.println(n + " already present ");
} else if (op == 2) {
    String n = c.readLine("enter team name ");
    if (names.remove(n)) // true --> remove else false
        System.out.println(n + " removed ");
    else
        System.out.println(n + " not present ");
} else if (op == 3) {
    System.out.println(names);
} else if (op == 4) {
    break;
} else {
    System.out.println("sorry i dont understand ");
}
}

Ln 38, Col 1
70% Windows (CRLF) UTF-8
```



The image shows a screenshot of a Java code editor window titled 'P8'. The code implements a menu system for managing a set of names. It includes options to add a new name, remove an existing one, print the current set of names, and exit. A watermark of a man's face with the text 'Kamal Sir' is visible in the top right corner of the screen.