



**BITS Pilani**  
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# Object Oriented Programming CS F213

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# Reading Input from Console

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# Command Line Arguments

# Command Line Arguments



```
class Account{
    int acc;
    String name;
    float amount;
    Account(int act,String aname){
        acc = act;
        name = aname;
    }

    void update(int act,String aname, float amt) {
        acc = act;
        name = aname;
        amount = amt;
    }
}
```

# Command Line Arguments



```
void display(){
    System.out.println(acc+" "+name+" "+amount);}
}
class second{
    public static void main(String[] args){
        Account a1=new Account(Integer.parseInt(args[0]),args[1]);
        a1.display();
        a1.update(Integer.parseInt(args[2]),args[3],Integer.parseInt(args[4]));
        a1.display();

    }
}
```

# Command Line Arguments (From Command Prompt)



Command Prompt

```
Microsoft Windows [Version 10.0.17134.165]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Dell>cd\

C:\>d:

D:\>cd COURSES

D:\COURSES>cd OOPS

D:\COURSES\OOPS>cd "FS 2018-2019"

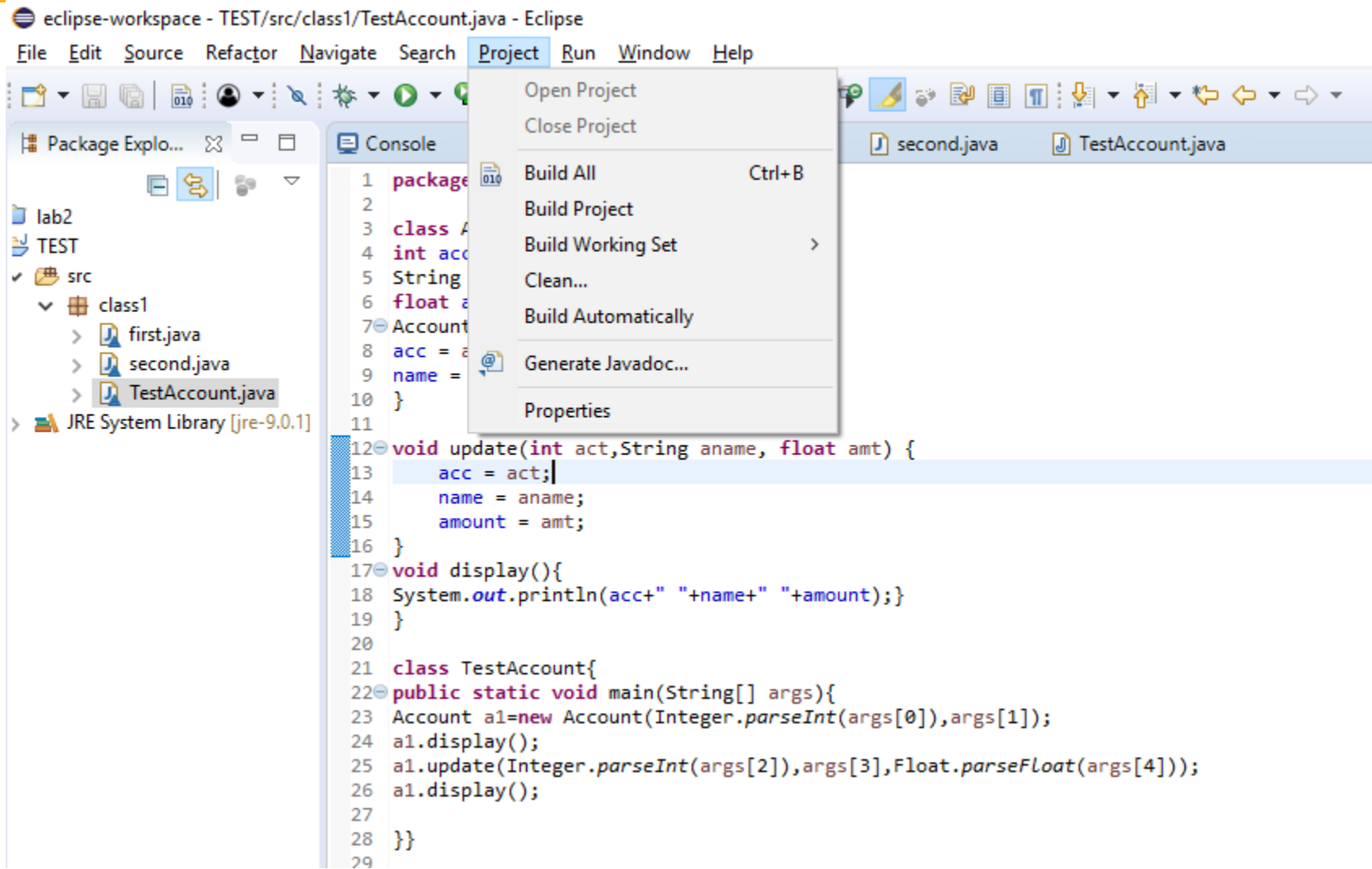
D:\COURSES\OOPS\FS 2018-2019>cd codes

D:\COURSES\OOPS\FS 2018-2019\codes>javac TestAccount.java

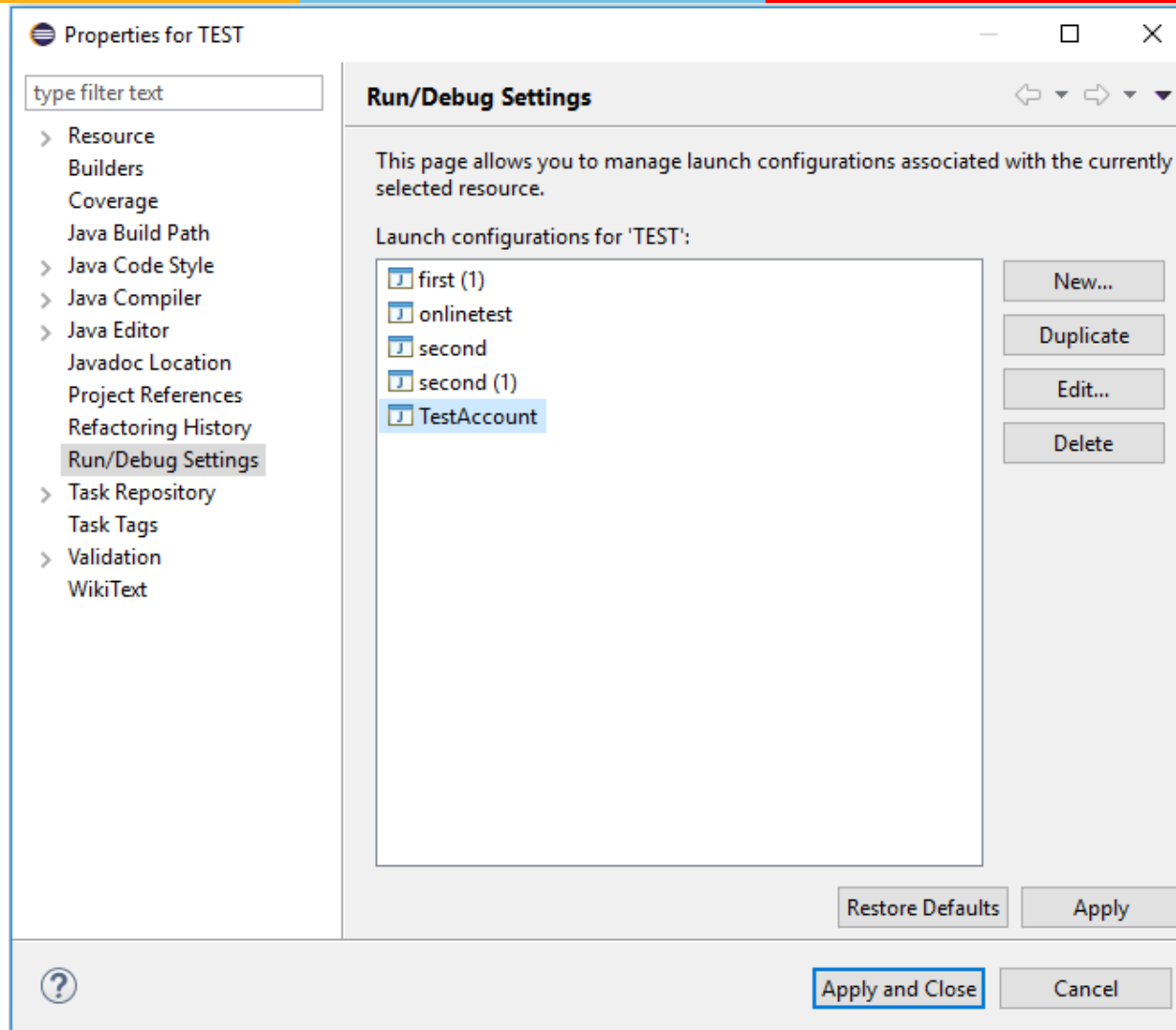
D:\COURSES\OOPS\FS 2018-2019\codes>java TestAccount 832345 "Ankit" 832345 "Aankit" 5000
832345 Ankit 0.0
832345 Aankit 5000.0

D:\COURSES\OOPS\FS 2018-2019\codes>_
```

# Command Line Arguments (From Eclipse)

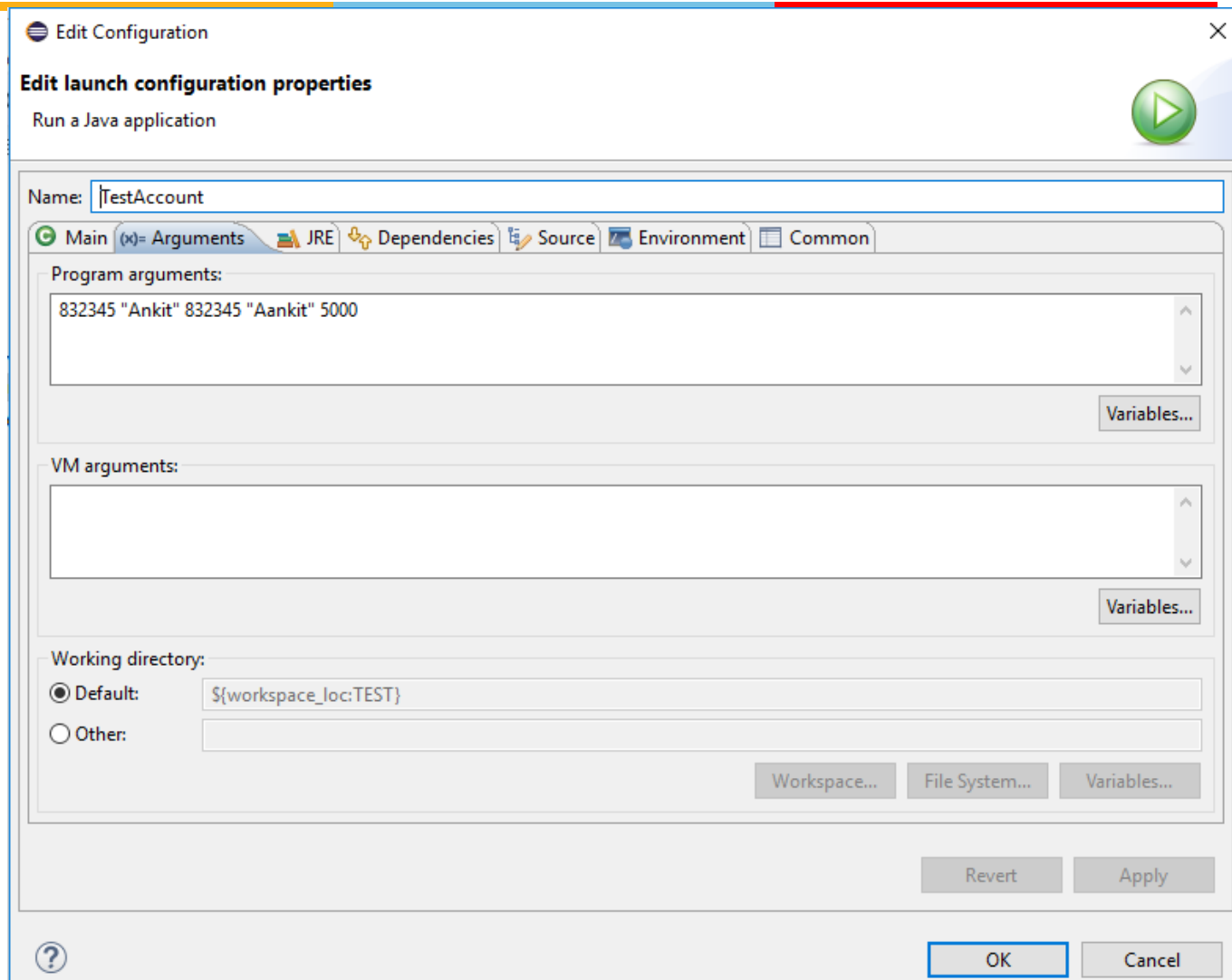


# Command Line Arguments (From Eclipse)





# Command Line Arguments (From Eclipse)





# Array of Objects

# Array of Objects



```
class Account{
    int acc;
    String name;
    float amount;
    void insert(int acc,String name,float amt){
        this.acc = acc;
        this.name = name;
        this.amount = amt;
    }

    void display(){
        System.out.println(acc+" "+name+" "+amount);}
}
```

# Array of Objects



```
class TestAccount{
public static void main(String[] args){
    Account[] a= new Account[3];

    for(int i=0;i<3;i++)
    {
        a[i]= new Account();
        a[i].insert(Integer.parseInt(args[3*i]), args[3*i+1], Float.parseFloat(args[3*i+2]));
        a[i].display();
    }
}}
```

## Output:

```
111 abc 1000.0
222 bcd 2000.0
333 cde 5000.0
```



# I/O Streams

# Stream



- Java performs I/O using Streams. It is a sequence of data
- In Java, stream is composed of bytes
- Three sources for receiving input and sending output
  - Console I/O, File I/O and Network I/O
- Automatically created streams
  - System.out: Standard output stream
  - System.in: Standard input stream
  - System.err: Standard error stream

# Streams Supported by JAVA



- **Byte Stream:** handle I/O of raw binary data; data is 8-bits
- **Character Stream:** Java uses a Unicode system which is a universal international standard character encoding that is capable of representing most of world's written languages. In Unicode, character holds 2 bytes.
- **Buffered Stream:** optimized to reduce the number of I/O calls. It reads a stream of data from memory to a buffer. Native input API is called only when the buffer is empty.
- **Data Stream:** handle binary I/O of primitive data type
- **Object Stream:** handle binary I/O of objects.

# BufferedReader



- Reads text from character input stream
- It is advisable to wrap `BufferedReader` around any `Reader` whose `read()` operations are costlier
  - Eg.: `BufferedReader in = new BufferedReader(new FileReader("foo.in"));`
- Without buffering, each invocation of `read()` could cause bytes to be read from the file, converted into characters and then its returned
- `read()` – reads a character or character array of known length from the stream; `readLine()` – reads a line of text followed by `'\n'` or `'\r'`



# BufferedReader-Example

---

```
import java.io.*;

class Account{
    int acc;
    String name;
    float amount;

    void insert(int acc,String name,float amt){
        this.acc = acc;
        this.name = name;
        this.amount = amt;  }

    void display(){
        System.out.println(acc+" "+name+" "+amount);}
}
```

```
class TestAccount{  
public static void main(String[] args) throws IOException{
```



```
Account a= new Account();
```

```
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
```

```
System.out.println("Enter the account no");
```

```
int acc ;
```

```
acc = Integer.parseInt(br.readLine());
```

```
System.out.println("Enter the name");
```

```
String name="";
```

```
name = br.readLine();
```

```
System.out.println("Enter the amount");
```

```
Float amount;
```

```
amount = Float.parseFloat(br.readLine());
```

```
a.insert(acc, name, amount);
```

```
a.display(); }}
```

### Console:

Enter the account no

111

Enter the name

Ankit

Enter the amount

5000

111 Ankit 5000.0

# Scanner Class



- It is in `java.util` package for obtaining input of primitive types like `int`, `double` etc. and strings
- Pass an object of `System.in` or file to create an object of the scanner class.
- To read numerical values of certain data type XYZ, use `nextXYZ()`. Eg. `nextInt()`, `nextFloat()` etc.
- To read strings, use `nextLine()`
- To read a character array, use `next()`. It is terminated by space, new line or carriage return
- To read single character, use `next().charAt(0)`

```
class TestAccount{  
public static void main(String[] args) {  
Account a= new Account();  
Scanner sr = new Scanner(System.in);
```



```
System.out.println("Enter the account no");  
int acc ;  
acc = sr.nextInt();
```

```
System.out.println("Enter the name");  
String name;  
name = sr.next();
```

```
System.out.println("Enter the amount");  
Float amount;  
amount = sr.nextFloat();
```

```
a.insert(acc, name, amount);  
a.display();  
sr.close(); }}
```

### Console:

```
Enter the account no  
111  
Enter the name  
Ankit  
Enter the amount  
5000  
111 Ankit 5000.0
```

```
class TestAccount{  
public static void main(String[] args) {  
Account a= new Account();  
Scanner sr = new Scanner(System.in);
```



```
System.out.println("Enter the account no");  
int acc ;  
acc = sr.nextInt();
```

```
System.out.println("Enter the name");  
String name;  
name = sr.next();
```

```
System.out.println("Enter the amount");  
Float amount;  
amount = sr.nextFloat();
```

```
a.insert(acc, name, amount);  
a.display();  
sr.close(); }}
```

### Console:

Enter the account no

111

Enter the name

Ankit Tiwari

Enter the amount

Exception in thread "main"

[java.util.InputMismatchException](#)

```
class TestAccount{
public static void main(String[] args) {
Account a= new Account();
Scanner sr = new Scanner(System.in);
```



```
System.out.println("Enter the account no");
int acc ;
acc = sr.nextInt();
```

```
System.out.println("Enter the name");
String name;
name = sr.nextLine();
```

```
System.out.println("Enter the amount");
Float amount;
amount = sr.nextFloat();
```

```
a.insert(acc, name, amount);
a.display();
sr.close(); }}
```

### Console:

Enter the account no

111

Enter the name

Enter the amount

Ankit

Exception in thread "main"

[java.util.InputMismatchException](#)

# What was the problem?

---

- In Scanner class if we call `nextLine()` method after any one of the seven `nextXYZ()` method then the `nextLine()` doesn't read values from console and cursor will not come into console it will skip that step.
  - The `nextXYZ()` methods are `nextInt()`, `nextFloat()`, `nextByte()`, `nextShort()`, `nextDouble()`, `nextLong()`, `next()`.
- `nextXYZ()` methods ignore newline character and `nextLine()` only reads till first newline character.
- Solution ?

```
class TestAccount{  
    public static void main(String[] args) {  
        Account a= new Account();  
        Scanner sr = new Scanner(System.in);
```



```
        System.out.println("Enter the account no");  
        int acc ;  
        acc = sr.nextInt();  
  
        sr.nextLine();  
        System.out.println("Enter the name");  
        String name;  
        name = sr.nextLine();  
  
        System.out.println("Enter the amount");  
        Float amount;  
        amount = sr.nextFloat();  
  
        a.insert(acc, name, amount);  
        a.display();  
        sr.close();    }}
```

### Console:

```
Enter the account no  
111  
Enter the name  
Ankit Tiwari  
Enter the amount  
5000  
111 Ankit Tiwari 5000.0
```



# Other differences



- BufferedReader should be used if we are working with multiple threads.
- BufferedReader has significantly larger buffer memory than Scanner.
  - The Scanner has a little buffer (1KB char buffer) as opposed to the BufferedReader (8KB byte buffer).
- BufferedReader is a bit faster as compared to scanner because scanner does parsing of input data and BufferedReader simply reads sequence of characters.