



**Faculty of Engineering & Technology**  
**Department of CSE**  
**Assignment**

**Course name: Design Pattern and Java Programming**  
**Course Code: CSE 2103**

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Ans to the ques. no - 1# GUI

⇒ GUI stands for Graphical User Interface.

GUI is a user friendly interface used to communicate with the help of electronic devices. It displays all the contents whether a text file or an object or a pictures or videos and all the things that a user want to visualise. It interacts well and can be used everywhere whether a mobile phone, tablet, laptops, personal computer and all the other electronic devices, It can be used best in the gaming side where the resolution is being considered.



## # Swing

⇒ Swing is the collection of user interface components for Java programs. It is part of Java classes that are referred to as JFC. In simple words, swing is the graphical user interface toolkit that is used for developing windows based Java applications or programs. It is the successor of AWT, which is known as Abstract window toolkit API for Java and AWT components are mainly heavyweight.

## # Features of Swing

⇒ The features of swing are as follows:

### (i) Platform Independent:

It is platform independent. The swing components that are used to build the program are not platform specific. It can be used on any platform.

(ii) Lightweight: Swing components are lightweight which helps in creating the UI lighter.

(iii) Plugging: It has a powerful component that can be extended to provide support for the user interface that helps in a good look and feel to the application. Its components are imported through a package called `java.swing`.

(iv) Manageable: It is easy to manage and configure. Its mechanism and composition pattern allows changing the settings at run-time as well.

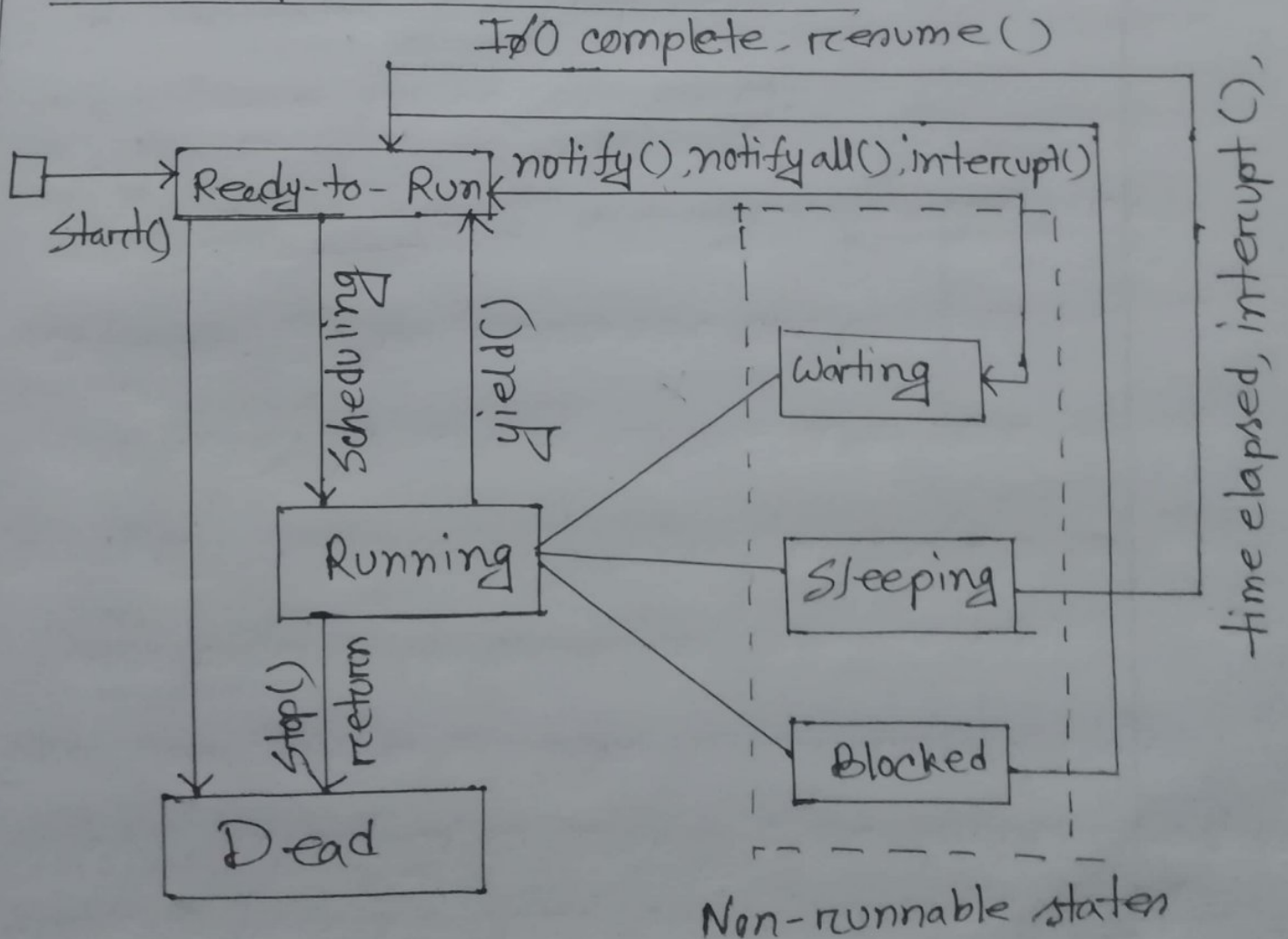
(v) MVC: They mainly follow the concept of MVC that is model view controller, with the help of this we can do the changes in one components without impacting or touching other components. It is known as loosely coupled architecture as well.



## Ans to the Q. no-2

# Threading: Threads allows a program to operate more efficiently by doing multiple things at the same time. Threads can be used to perform complicated tasks in the background without interrupting the main program.

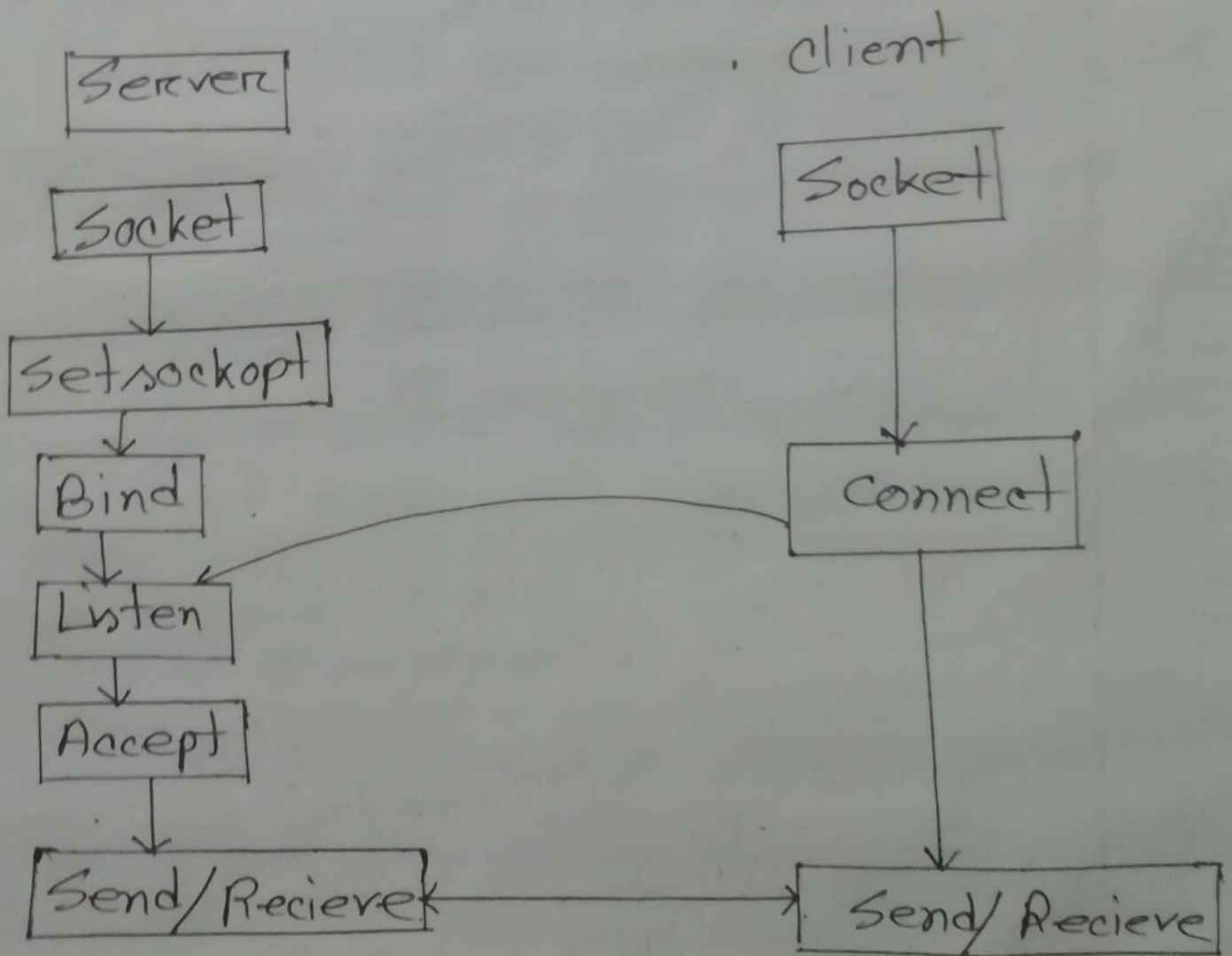
Life-cycle of a thread in java-



### Ans to the ques no-13

Socket programming is a way of connecting two nodes on a network to communicate with each other. One socket (node) listens on a particular port at an IP, while other socket reaches out to the other in order to form a connection.

⇒ State diagram for server and client model



☐ A java program showing a single client-single server java socket program-

```
package server;
```

```
import java.net.*;
```

```
import java.io.*;
```

```
class MyServer {
```

```
public static void main(String args[]) throws  
Exception {
```

```
ServerSocket ss = new ServerSocket(1201);
```

```
Socket s = ss.accept();
```

```
DataInputStream din = new DataInputStream(  
s.getInputStream());
```

```
DataOutputStream dout = new DataOutputStream(  
s.getOutputStream());
```

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



```
String str = "", str2 = "";
```

```
while (!str.equals("stop")) {
```

```
    str = din.readUTF();
```

```
    System.out.println("Client says: " + str);
```

```
    str2 = br.readLine();
```

```
    dout.writeUTF(str2);
```

```
    dout.Flush();
```

```
}
```



```
package client;
import java.net.*;
import java.io.*;
class MyClient{
    public static void main (String args[]) throws
        Exception {
        Socket s = new Socket ("localhost", 1201);
        DataInputStream din = new DataInputStream (s.getInputStream());
        DataOutputStream dout = new DataOutputStream (
            s.getOutputStream());
        BufferedReader br = new BufferedReader (
            new InputStreamReader (System.in));
        String str = " ", str2 = " ";
```

```
while (!str.equals("stop")) {
```

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

```
    dout.writeUTF(str);
```

```
    dout.flush();
```

```
    str2 = din.readUTF();
```

```
    System.out.println("Server says: " + str2);
```

```
}
```