ECAP615

Programming in Java

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Learning Outcomes

After this lecture, you will be able to

- learn the basic concept Java Networking
- know the various terminologies used in java networking
- understand the various classes used in networking

Networking

- Network programming refers to writing programs that execute across multiple devices (computers), in which the devices are connected to each other via a network.
- Java encapsulates classes and interfaces to allow low-level communication details.

Networking

- Java Networking is a concept of connecting two or more computing devices together so that we can share resources.
- Java program communicates over the network at the application layer.
- java.net package is useful for all the Java networking classes and interfaces.

Networking

The java.net package provides support for two protocols. They are as follows:

- TCP
- UDP

Java Networking Terminologies

The widely used Java networking terminologies are:

- IP Address
- Protocol
- Port Number
- MAC Address
- Connection-oriented and connection-less protocol
- Socket

InetAddress

- Inet Address encapsulates both numerical IP address and the domain name for that address.
- This address can handle both IPv4 and Ipv6 addresses.
- Inet Address class has no visible constructor.
- To create an inet Address object, you have to use Factory methods.

InetAddress

Three commonly used Inet Address factory methods are.

- ✓static InetAddress getLocalHost() throws UnknownHostException
- ✓static InetAddress getByName (String hostname) throws UnknownHostException
- ✓static InetAddress[ ] getAllByName (String hostname) throws UnknownHostException

Example

```
import java.net.*;

class Demo

{

  public static void main(String[] args) throws UnknownHostException

  {

    InetAddress address = InetAddress.getLocalHost();

    System.out.println(address);

    address = InetAddress.getByName("www.google.com");

    System.out.println(address);

     } }
```

Socket and ServerSocket Class

- Socket is foundation of modern networking, a socket allows single computer to serve many different clients at once.
- Socket establishes connection through the use of port, which is a numbered socket on a particular machine.
- Socket communication takes place via a protocol.
- Socket provides communication mechanism between two computers using TCP.

Socket and ServerSocket Class

There are two kind of TCP sockets in Java.

One is for server and other is for client.

✓ServerSocket .

✓Socket .

URL class

- Java URL Class present in java.net package, deals with URL which uniquely identify or locate resources on internet.

The following are the important Methods of URL class:

✓getProtocol()

✓getHost()

✓getPort()

✓getFile()

Example

```
import java.net.*;

class URLExample

{

  public static void main(String[] arg) throws MalformedURLException

  {

    URL ul = new URL("http://www.gmail.com/home");

    System.out.println(ul.getProtocol());

    System.out.println(ul.getFile());

  }

}
```


That’s all for now…