

## 2.1 Write the program to Demonstrate Which Protocol the virtual machine support?

### Program:

```
import java.net.*;

public class ProtocolChecker {

    public static void main(String[] args) {

        testProtocol("http://www.Whatsapp.com");
        testProtocol("https://www.DrDuck.com");
        testProtocol("ftp://ImageUploader.to");
        testProtocol("mailto:Pakhrinayush56@gmail.com");
        testProtocol("telnet://ARStore.to");
        testProtocol("file:///BlahBlah/UserData");
        testProtocol("gopher://gopher.anc.org.za/");
        testProtocol("ldap://TU.com");
        testProtocol("jar:http://LavieGarden.com");
        testProtocol("nfs://utopia.poly.edu/usr/tmp/");
        testProtocol("jdbc:mysql://Amazon.com:5000/Products");
        testProtocol("rmi://ibiblio.org/RenderEngine");
        testProtocol("doc:/UsersGuide/release.html");
        testProtocol("netdoc:/UsersGuide/release.html");
        testProtocol("systemresource://www.youtube.com/index.html");
        testProtocol("verbatim:http://www.Facebook.com/");

    }

    private static void testProtocol(String url) {

        try {

            URL u = new URL(url);

            System.out.println(u.getProtocol() + " is supported");

        } catch (Exception e) {

            System.out.println("Protocol not supported: " + url);

        }

    }

}
```

```
    } catch (MalformedURLException ex) {  
        String protocol = url.substring(0, url.indexOf(':'));  
        System.out.println(protocol + " is not supported");  
    }  
}  
}
```

## Output:

```
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Users\pakhr\AppData\Local\JetBrains\IntelliJ IDEA Community Edition  
http is supported  
https is supported  
ftp is supported  
mailto is supported  
telnet is not supported  
file is supported  
gopher is not supported  
ldap is not supported  
jar is not supported  
nfs is not supported  
jdbc is not supported  
rmi is not supported  
doc is not supported  
netdoc is not supported  
systemresource is not supported  
verbatim is not supported  
  
Process finished with exit code 0
```

## 2.2 Write a program to download the WebPage.

### Program:

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

public class WebPageDownloadProgram {
    public static void main(String[] args) {
        if (args.length > 0) {
            InputStream in = null;
            try {
                URL u = new URL(args[0]);
                in = u.openStream();
                in = new BufferedInputStream(in);
                Reader r = new InputStreamReader(in);
                int c;
                while ((c = r.read()) != -1)
                {
                    System.out.print((char) c);
                }
            }
            catch (MalformedURLException ex) {
                System.err.println(args[0] + " is not a parseable URL");
            }
            catch (IOException ex) {
                System.err.println(ex);
            }
            finally {
                if (in != null) {
                    try {
                        in.close();
                    }
                    catch (IOException ex) {
                        System.err.println(ex);
                    }
                }
            }
        }
    }
}
```

```

    }

    catch (IOException e) {

        System.out.println(e.getMessage());

    }

}

}

}

}

}

}

}

}

```

## Output:

```

PS C:\Users\pakh\Desktop\oth sem\Network Programming\URLProgramsLab\src> java .\WebPageDownloadProgram.java https://smallwebsite.us/
<!DOCTYPE html><html lang="en-US" dir="ltr"><head><meta name="viewport" content="width=device-width, initial-scale=1.0"><meta http-equiv="X-UA-Compatible" content="IE=edge" /><meta http-equiv="Content-Type" content="text/html; charset=UTF-8" /><link rel="profile" href="http://gmpg.org/xfn/11" /><link rel="pingback" href="https://smallwebsite.us/xmlrpc.php" /><meta name="robots" content="index, follow, max-image-preview:large, max-snippet:-1, max-video-preview:-1" /><title>Small Website &#183; Small Website</title><meta name="description" content="Have you experimented with the build-it-yourself options and concluded &quot;that is just not for me&quot;; you have found your Small Website solution - Read More" /><link rel="canonical" href="https://smallwebsite.us/" /><meta property="og:locale" content="en_US" /><meta property="og:type" content="website" /><meta property="og:title" content="Small Website &#183; Small Website" /><meta property="og:description" content="Have you experimented with the build-it-yourself options and concluded &quot;that is just not for me&quot;; you have found your Small Website solution - Read More" /><meta property="og:url" content="https://smallwebsite.us/" /><meta property="og:site_name" content="Small Website" /><meta property="article:modified_time" content="2019-03-29T13:48:31+00:00" /><meta property="og:image" content="https://smallwebsite.us/wp-content/uploads/2019/01/Small_website800.jpg" /><meta property="og:image:width" content="800" /><meta property="og:image:height" content="533" /><meta property="og:image:type" content="image/jpeg" /><meta name="twitter:card" content="summary_large_image" /><script type="application/ld+json" class="yoast-schema-graph">{"@context":"https://schema.org","@graph":[{"@type":"WebPage","@id":"https://smallwebsite.us/","url":"https://smallwebsite.us/","name":"Small Website &#183; Small Website","isPartOf":{"@id":"https://smallwebsite.us/#website"},"about":{"@id":"https://smallwebsite.us/#organization"},"primaryImageOfPage":{"@id":"https://smallwebsite.us/#primaryImage"},"image":{"@id":"https://smallwebsite.us/#primaryImage"},"thumbnailUrl":"https://smallwebsite.us/wp-content/uploads/2019/01/Small_website800.jpg","datePublished":"2019-01-30T16:41:18+00:00","dateModified":"2019-03-29T13:48:31+00:00","description":"Have you experimented with the build-it-yourself options and concluded \"that is just not for me\" you have found your Small Website solution - Read More","breadcrumb":{"@id":"https://smallwebsite.us/#breadcrumb"},"inLanguage":"en-US","potentialAction":[{"@type":"ReadAction","target":{"@id":"https://smallwebsite.us/"}},{@type":"ImageObject","inLanguage":"en-US","@id":"https://smallwebsite.us/#primaryImage","url":"https://smallwebsite.us/wp-content/uploads/2019/01/Small_website800.jpg","width":800,"height":533,"caption":"Group of entrepreneurs and business people sitting at the table and discussing potential cooperation and joint projects."},{@type":"BreadcrumbList","@id":"https://smallwebsite.us/#breadcrumb","itemListElement":[{"@type":"ListItem","position":1,"name":"Home"}]},{@type":"WebSite","@id":"https://smallwebsite.us/#website","url":"https://smallwebsite.us/","name":"Small Website","description":"If a ?Build-it-Yourself? Website is Just Not for You","publisher":{"@id":"https://smallwebsite.us/#organization"},"potentialAction":[{"@type":"SearchAction","target":{"@type":"EntryPoint","urlTemplate":"https://smallwebsite.us/?s={search_term_string}"},{"query-input":{"required-name=search_term_string}}],"inLanguage":"en-US"},{@type":"Organization","@id":"https://smallwebsite.us/#organization","name":"Small Website","url":"https://smallwebsite.us/","logo":{"@type":"ImageObject","inLanguage":"en-US","@id":"https://smallwebsite.us/#schema/logo/image","url":"https://smallwebsite.us/wp-content/uploads/2019/01/Small_website800.jpg","contentUrl":"https://smallwebsite.us/wp-content/uploads/2019/01/Small_website800.jpg","width":800,"height":533,"caption":"Small Website"},"image":{"@id":"https://smallwebsite.us/#schema/logo/image"}]}]}</script><meta name="msvalidate.01" content="E6C0C04EE7E265AB3CCF8EE6286E303A" /><meta name="google-site-verification" content="UA-219498646-1" /><link rel="alternate" type="application/rss+xml" title="Small Website &#183; Small Website Comments Feed" href="https://smallwebsite.us/contact-us-1-866-932-4774-1866webissimple/a-smallwebsite-us-built-just-for-you-500-complete/feed/" /><script type="text/javascript">/* */

```

## 2.3 Write a program to download an Object.

### Program:

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

public class ObjectDownloadProgram {
    public static void main(String[] args) {
        if (args.length > 0) {
            try {
                URL u = new URL(args[0]);
                Object o = u.getContent();
                System.out.println("Object: " + o.getClass().getName());
            } catch (MalformedURLException ex) {
                System.err.println(args[0] + " is not a parseable URL");
            } catch (IOException ex) {
                System.err.println(ex.getMessage());
            }
        }
    }
}
```

### Output:

```
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab> cd .\src\
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\ObjectDownloadProgram.java https://smallwebsite.us/
Object: sun.net.www.protocol.http.HttpURLConnection$HttpInputStream
```

## 2.4 Write a program to split the parts of a URL.

### Program:

```
import java.net.*;

public class MyAddressProgram {

    public static void main(String[] args){

        try {

            InetAddress me = InetAddress.getLocalHost();

            String dottedQuad = me.getHostAddress();

            System.out.println("My address: " + dottedQuad);

        } catch (UnknownHostException ex) {

            System.out.println("Myan! I got no address");

        }

    }

}
```

### Output:

```
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\URLSplitterProgram.java https://www.youtube.com/watch?v=1Y0wpVCoE48
The URL is https://www.youtube.com/watch?v=1Y0wpVCoE48
The scheme is https
The user info is null
The host is www.youtube.com
The port is -1
The path is /watch
The ref is null
The query string is v=1Y0wpVCoE48
```

## 2.5 Write a program to compare two URLs.

### Program:

```
import java.net.*;

public class URLsCompareProgram {

    public static void main(String[] args) {

        try

        {

            URL first = new URL("https://www.animension.to/");

            URL second = new URL("https://www.animension.com/");

            if (second.equals(first)) {

                System.out.println(second + " is the same as " + first);

            } else {

                System.out.println(second + " is not the same as " + first);

            }

        }

        catch (MalformedURLException e)

        {

            System.err.println(e.getMessage());

        }

    }

}
```

### Output:

```
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\URLsCompareProgram.java
https://www.animension.com/ is the same as https://www.animension.to/
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> |
```

## 2.6 Write a program to split the parts of URI .

### Program:

```
import java.net.*;

public class URISplitterProgram {

    public static void main(String[] args) {

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

            try {

                URI u = new URI(args[i]);

                System.out.println("The URI is " + u);

                if (u.isOpaque()) {

                    System.out.println("This is an opaque URI.");

                    System.out.println("The scheme is " + u.getScheme());

                    System.out.println("The scheme specific part is "

                        + u.getSchemeSpecificPart());

                    System.out.println("The fragment ID is " + u.getFragment());

                } else {

                    System.out.println("This is a hierarchical URI.");

                    System.out.println("The scheme is " + u.getScheme());

                    try {

                        u = u.parseServerAuthority();

                        System.out.println("The host is " + u.getHost());

                        System.out.println("The user info is " + u.getUserInfo());

                        System.out.println("The port is " + u.getPort());

                    } catch (URISyntaxException ex) {

                        System.out.println("The authority is " + u.getAuthority());

                    }

                    System.out.println("The path is " + u.getPath());

                }

            }

        }

    }

}
```



```

        System.out.println("The query string is " + u.getQuery());
        System.out.println("The fragment ID is " + u.getFragment());
    }
}
catch(URISyntaxException ex){
    System.err.println(args[i] + " does not seem to be a URI.");
}
System.out.println();
}
}
}

```

## Output:

```

PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\URISplitterProgram.java https://Ayush@www.google.com:3340/search?q=Total+war+hammer
The URI is https://Ayush@www.google.com:3340/search?q=Total+war+hammer
This is a hierarchical URI.
The scheme is https
The host is www.google.com
The user info is Ayush
The port is 3340
The path is /search
The query string is q=Total+war+hammer
The fragment ID is null

```

## 2.7 Write a Program to print various encoded strings.

### Program:

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

public class URLEncodeProgram {
    public static void main(String[] args)
    {
        try
        {
            System.out.println(URLEncoder.encode("Yo string ma spaces
            xa","UTF-8"));

            System.out.println(URLEncoder.encode("Yo*string*ma*asterisks*xa","
            UTF-8"));

            System.out.println(URLEncoder.encode("Yo%string%ma%percent%sign
            s%xa","UTF-8"));

            System.out.println(URLEncoder.encode("Yo+string+ma+pluses%xa","U
            TF-8"));

            System.out.println(URLEncoder.encode("Yo/string/ma/slashes/xa","UTF
            -8"));

            System.out.println(URLEncoder.encode("Yo\"string\"ma\"quote\"marks\"
            \"xa","UTF-8"));
        }
    }
}
```

```
System.out.println(URLEncoder.encode("Yo:string:ma:colons:xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yo~string~ma~tildes~xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yo(string)ma(parentheses)xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yo.string.ma.periods.xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yo=string=ma>equals=signs=xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yo&string&ma&ampersands&xa","UTF-8"));
```

```
System.out.println(URLEncoder.encode("Yóéstringémaé non-ASCII characters xa","UTF-8"));
```

```
    }  
    catch (UnsupportedEncodingException ex)  
    {  
        System.out.println("Broken VM does not support UTF-8");  
    }  
}  
}
```

## Output:

```
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\URLEncodeProgram.java
Yo+string+ma+spaces+xa
Yo*string*ma*asterisks*xa
Yo%25string%25ma%25percent%25signs%25xa
Yo%2Bstring%2Bma%2Bpluses%25xa
Yo%2Fstring%2Fma%2Fslashes%2Fxa
Yo%22string%22ma%22quote%22marks%22xa
Yo%3Astring%3Ama%3Acolons%3Axa
Yo%7Estring%7Ema%7Etildes%7Exa
Yo%28string%29ma%28parentheses%29xa
Yo.string.ma.periods.xa
Yo%3Dstring%3Dma%3Dequals%3Dsigns%3Dxa
Yo%26string%26ma%26ampersands%26xa
Yo%C3%A9string%C3%A9ma%C3%A9+non-ASCII+characters+xa
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src>
```

## 2.8 Write a program that decode the provided URL.

### Program:

```
import java.io.UnsupportedEncodingException;
import java.net.URLDecoder;

public class URLDecodeProgram {
    public static void main(String[] args) {
        try {
            String input =
"https://www.google.com/search?q=Total+war+hammer&oq=Total+war
+hamme";

            String query = input.substring(input.indexOf("?") + 1);
            String decodedQuery = URLDecoder.decode(query, "UTF-8");
            String output = input.substring(0, input.indexOf("?") + 1) +
decodedQuery;

            System.out.println("Original URL: " + input);
            System.out.println("Decoded URL: " + output);

        }
        catch (UnsupportedEncodingException e)
        {
            System.out.println(e.getMessage());
        }
    }
}
```

### Output:

```
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src> java .\URLDecodeProgram.java
Original URL: https://www.google.com/search?q=Total+war+hammer&oq=Total+war+hamme
Decoded URL: https://www.google.com/search?q=Total war hammer&oq=Total war hamme
PS C:\Users\pakhr\Desktop\6th sem\Network Programming\URLProgramsLab\src>
```

## 2.9 Write a program to demonstrate a ProxySelector that remembers what it can connect to.

### Program:

#### ProxyProgram.java

```
import java.io.IOException;
import java.net.HttpURLConnection;
import java.net.*;

public class ProxyPrograms {
    public static void main(String[] args){
        java.net.ProxySelector.setDefault(new LocalProxySelector());
        try {
            URL url=new URL("https://www.youtube.com");
            HttpURLConnection connection=(HttpURLConnection)
url.openConnection();
            connection.connect();
            System.out.println("HTTP Request Succeeded:
"+connection.getResponseCode());
        } catch(IOException e){
            System.out.println("HTTP Request Failed!");
        }
        try {
            URL url=new URL("https://www.facebook.com");
            HttpURLConnection connection=(HttpURLConnection)
url.openConnection();
            connection.connect();
            System.out.println("HTTP Request Succeeded:
"+connection.getResponseCode());
        } catch(IOException e){
```

```
        System.out.println("HTTP Request Failed!");
    }
    try {
        URL url=new URL("https://www.instagram.com");
        HttpURLConnection connection=(HttpURLConnection)
url.openConnection();
        connection.connect();
        System.out.println("HTTP Request Succeeded:
"+connection.getResponseCode());
    }catch(IOException e){
        System.out.println("HTTP Request Failed!");
    }
    try {
        URL url=new URL("https://www.asdasd.com");
        HttpURLConnection connection=(HttpURLConnection)
url.openConnection();
        connection.connect();
        System.out.println("HTTP Request Succeeded:
"+connection.getResponseCode());
    }catch(IOException e){
        System.out.println("HTTP Request Failed!");
    }
}
}
```

## **LocalProxySelector.java**

```
import java.io.*;
import java.net.*;
import java.util.*;

public class LocalProxySelector extends ProxySelector {

    private List<URI> failed = Collections.synchronizedList(new
    ArrayList<URI>());

    public List<Proxy> select(URI uri) {
        List<Proxy> result = new ArrayList<Proxy>();
        if (failed.contains(uri) || !"http".equalsIgnoreCase(uri.getScheme()))
        {
            result.add(Proxy.NO_PROXY);
        } else {
            SocketAddress proxyAddress = new
            InetSocketAddress("proxy.example.com", 8000);
            Proxy proxy = new Proxy(Proxy.Type.HTTP, proxyAddress);
            result.add(proxy);
        }
        return result;
    }

    public void connectFailed(URI uri, SocketAddress address,
    IOException ex) {
        System.err.println("Connection to " + uri + " failed: " +
        ex.getMessage());
        failed.add(uri);
    }
}
```



```
public static void main(String[] args) {  
    java.net.ProxySelector.setDefault(new LocalProxySelector());  
}  
}
```

## Output:

```
PS C:\Users\pakhr\Desktop\óth sem\Network Programming\URLProgramsLab\src> javac .\LocalProxySelector.java  
PS C:\Users\pakhr\Desktop\óth sem\Network Programming\URLProgramsLab\src> javac .\ProxyPrograms.java  
PS C:\Users\pakhr\Desktop\óth sem\Network Programming\URLProgramsLab\src> java .\ProxyPrograms.java  
HTTP Request Succeeded: 200  
HTTP Request Succeeded: 200  
HTTP Request Succeeded: 200  
HTTP Request Failed!  
PS C:\Users\pakhr\Desktop\óth sem\Network Programming\URLProgramsLab\src> |
```