

NETS 1500 - HW3 Theory

1. Does Java have a URI class? If yes, list two differences between the URI class and the URL class in Java? (5 points)
 - a. Yes, Java has a URI class, which implements Serializable and Comparable<URI>.
 - b. One difference is that the URL class has an openConnection() method that returns a URLConnection that represents a connection to the object the URL refers to. On the other hand, the URI class has no analogous method that opens or returns a connection. You would have to use the URL class if you had a URI and wanted to use the open connection method.
 - c. A second difference is that the URI class (and not the URL class) has a relative method that inputs a URI and outputs a String after relativizing the given URI against this URI. That is, it checks using one URI as the base to find the “tail” of a URI.
2. What happens if the URL constructor’s parameter is given an invalid URL (such as “www.cis.upenn.edu”)? (5 points)

```
public static void main(String[] args) {
    URLGetter url = new URLGetter("www.cis.upenn.edu");
}
```

a.

```
java.net.MalformedURLException: Create breakpoint : no protocol: www.cis.upenn.edu
    at java.base/java.net.URL.<init>(URL.java:675)
    at java.base/java.net.URL.<init>(URL.java:570)
    at java.base/java.net.URL.<init>(URL.java:517)
    at URLGetter.<init>(URLGetter.java:16)
    at URLTester.main(URLTester.java:5)
Exception in thread "main" java.lang.NullPointerException: Cannot invoke "java.net.HttpURLConnection.getResponseCode()" because "this.httpConnection" is null
    at URLGetter.printStatusCode(URLGetter.java:28)
    at URLTester.main(URLTester.java:6)
Process finished with exit code 1
```

b.

- c. The URL constructor will throw a MalformedURLException because it can’t handle something unformatted like this. This causes the httpConnection to be null.
3. Paper Program – modify the URLGetter code from class (posted in canvas) so that it now has an additional method getRedirectURL() that returns the redirected URL if the server returns a 3xx response code. (10 points)
 - a. Below is a screenshot of the code I wrote in IntelliJ for this method.

```

public URL getRedirectURL() {
    URL ret = null;
    try {
        ret = new URL(httpConnection.getHeaderField( name: "Location"));
    } catch (IOException e) {
        throw new RuntimeException(e);
    }

    return ret;
}

```

b.

- c. Below is a screenshot of the code I wrote in IntelliJ for this method to ensure that the response code is of the type 3xx.

```

public URL getRedirectURL() {
    URL ret = null;
    try {
        if (Math.abs(httpConnection.getResponseCode() % 300) < 100) {
            ret = new URL(httpConnection.getHeaderField( name: "Location"));
        }
    } catch (IOException e) {
        throw new RuntimeException(e);
    }

    return ret;
}

```

d.