Practice-6.2:

1. Describe the difference between a syntax error, a logic error, and an exception
   Code:
   Syntax error:
   int number = 10 // Missing semicolon
   logic error:
   int a = 5;
   int b = 3;
   int result = a - b; // Intended to add, but used subtraction
   exception:
   int[] arr = new int[5];
   int value = arr[10]; // ArrayIndexOutOfBoundsException

```java
1  package helloworld;
2  import java.util.Arrays;

5
6  public class Main {
7      public static void main(String[] args) {
8          String str = "Hello World";
9          for(int i = 0; i < 4; i++); // Semicolon terminates the for loop
10         {
11             System.out.println(str);
12             str+= "!";
13         }
14     }
15 }
```

```
Problems  @ Javadoc  Declaration  Console ×
<terminated> Main [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe  (06-Aug-2024, 9:13:00 am – 9:13:03 am) [pid:
Exception in thread "main" java.lang.Error: Unresolved compilation problems:
        Syntax error on token "Invalid Character", @ expected
        Syntax error, type annotations are illegal here
        World cannot be resolved to a variable
        Syntax error on token "Invalid Character", delete this token

        at helloworld/helloworld.Main.main(Main.java:8)
```

2. What is wrong with the following code? It should print "Hello World!" four times to the
   screen
   Code:

```java
String str = "Hello World";
for(int i = 0; i < 4; i++); // Semicolon terminates the for loop
{
    System.out.println(str);
    str+= "!";
}
```

3. Describe an exception that you have experienced in your program before. Explain how it could be handled with a try/catch block of code.
   Code:
   ```java
   int[] arr = new int[5];
   System.out.println(arr[10]); // ArrayIndexOutOfBoundsException
   ```

4. Write a segment of code that has:

   a. A syntax error

   b. A logic error

   c. An exception

syntax error:

```java
int number = 10; // Missing semicolon
```

logic error:

```java
int a = 5;

int b = 3;

int result = a - b; // Intended to add, but used subtraction
```

exeption:

```java
int[] arr = new int[5];

System.out.println(arr[10]); // ArrayIndexOutOfBoundsException
```

5. What is the difference between a checked exception and an unchecked exception?
   Code:
   Checked exeption:
   ```java
   try {
       FileReader file = new FileReader("somefile.txt");
   } catch (FileNotFoundException e) {
       e.printStackTrace();
   }
   ```

   Unchecked exeption:

   ```java
   String str = null;
   System.out.println(str.length()); // NullPointerException
   ```