

1. Create a thread in either a C or a Java program and run it. The thread should read a keyboard value "x" and exit from the code, or it can also use an "ESC" to exit. That is, the thread should run until the keyboard exit character is entered. Print your source code and output to a single file and generate a pdf and submit it in Blackboard. Put your compile and run options if any in the code as comments.

Source:

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

/**
 * @author Kevin Kuo
 *
 */
public class Homework4AJava implements Runnable{

    /**
     * @param args
     */
    public static void main(String[] args) {
        // TODO Auto-generated method stub

        new Thread(new Homework4AJava()).start();
    }

    @Override
    public void run() {
        // TODO Auto-generated method stub
        long threadId = Thread.currentThread().getId();
        System.out.println("Begin Thread! Thread ID: " + threadId);
        char c = 'y';

        //wait for escape character
        while(c != 'x'){
            try {
                c = (char) System.in.read();
            } catch (IOException e) {
                e.printStackTrace();
            }
            if (c == 'x'){
                break;
            }
        }

        threadId = Thread.currentThread().getId();
        System.out.println("End Thread! Thread ID: " + threadId);
    }
}
```

Output:

```
Begin Thread! Thread ID: 11
asdf
sa
xa
End Thread! Thread ID: 11
```

2. Using the above thread program, now create 20 threads in your program and run them. No need to wait for the keyboard in each thread, just print "Hello" and its thread id in each thread on a single line and exit. Append your source code and output to the same file as listed above. Add enough comments in your program to make it readable.

Source:

```
/**
 * @author Kevin Kuo
 *
 */
public class Homework4BJava implements Runnable{

    /**
     * @param args
     */
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        for (int i = 0; i < 20; i++){
            (new Thread(new Homework4BJava())).start();
        }

    }

    @Override
    public void run() {
        // TODO Auto-generated method stub
        long threadId = Thread.currentThread().getId();
        System.out.println("Hello World! Thread ID: " + threadId);
    }

}
```

Output:

```
Hello World! Thread ID: 11
Hello World! Thread ID: 15
Hello World! Thread ID: 14
Hello World! Thread ID: 13
Hello World! Thread ID: 12
Hello World! Thread ID: 17
Hello World! Thread ID: 18
Hello World! Thread ID: 16
Hello World! Thread ID: 19
```

Hello World! Thread ID: 20
Hello World! Thread ID: 21
Hello World! Thread ID: 22
Hello World! Thread ID: 23
Hello World! Thread ID: 24
Hello World! Thread ID: 25
Hello World! Thread ID: 26
Hello World! Thread ID: 27
Hello World! Thread ID: 28
Hello World! Thread ID: 29
Hello World! Thread ID: 30