CS526
Homework Assignment 1

Due: 2/2

This assignment is a practice of using basic Java features, such as selection statements, iteration statements, and using arrays. This assignment is worth 20 points.

An incomplete program named *Hw1.java*, which must include four methods, is provided. You must implement three methods within the program as described below. The fourth method, which is a *main* method, is already written in the program and you can use it to test your program.

The three methods you must implement are:

- *find* method
  - Signature:

    ```
    public static void find(int[] a, int x)
    ```

  - Behavior:
    - Receives an array of integers *a* and an integer *x*.
    - Perform a linear search on *a* for *x*.
    - If *x* is in *a*, print the indexes of the array slots where *x* is stored (there may be multiple *x*'s in *a*) on the screen.
    - If *x* is not in *a*, print the message "*x* does not exist" on the screen.

  Note that you should not use Java's built-in method. Your program must scan and search the array.

- *subarray* method
  - Signature:

    ```
    public static int[] subarray(int[] a, int low, int high)
    ```

  - Behavior:
    - Receives an array of integers *a*, lower bound *low*, and upper bound *high*.
    - Creates and returns a *subarray a[low..high]*, including both *a[low]* and *a[high]*.

  Note that you should not use Java's built-in method when creating a subarray. Your program must do it.

- *isPrifix* method
  - Signature:

    ```
    public static boolean isPrefix(String s1, String s2)
    ```

- Behavior:
  - Receives two strings *s1* and *s2*. Assume that length of *s1* <= length of *s2*.
  - Returns true if *s1* is a prefix of *s2*.

Note that you should not use Java's built-in method. Your program must determine whether *s1* is a prefix of *s2* or not.

- *main* method
  The main method is already written in the given file and it is used to test above three methods. After completing the above three methods, if you run your program, your output must be:

```
5 is in a[0]
5 is in a[2]
5 is in a[7]
10 does not exist

a[1..6] = [3, 5, 6, 1, 2, 12]

abc is a prefix of abcde
abc is not a prefix of abdef
```

You may want to test your program with different input arguments.

Grading

- If your program does not compile, 16 points are deducted.
- If your program compiles but causes a runtime error, 12 points are deducted.
- For each method, if there is no output or output is completely wrong, 4 points are deducted.
- For each method, if your output is partially wrong, up to 4 point are deducted.

Deliverable

No separate documentation is needed. However, you must include the following in your source code:
- Include the following comments above each method:
  - Brief description of the method
  - Input arguments
  - Output arguments
- Include sufficient inline comments within your source code to increase readability of your code and to help readers better understand your code.

You must submit the following files:
- *Hw1.java*