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CSE 2221 Homework 7

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1.

a. Prints only the uppercase letters in the String:

```
out.print("Enter a string: ");
String input = in.nextLine();
out.print("The uppercase letters in the string are: ");
for (int i = 0; i < input.length(); i++) {
    if (Character.isUpperCase(input.charAt(i))) {
        out.print(input.charAt(i));
    }
}
```

b. Prints every second letter of the String:

```
out.print("Enter a string: ");
String input = in.nextLine();
out.print("Every second letter: ");
for (int i = 0; i < input.length(); i++) {
    if (i % 2 == 1) {
        out.print(input.charAt(i));
    }
}
```

c. Prints the String with all vowels replaced by an underscore:

```
char[] vowels = { 'a', 'e', 'i', 'o', 'u' };
int numVowels;
out.print("Enter a string: ");
String input = in.nextLine();
out.print("All the vowels in the string: ");
for (int i = 0; i < input.length(); i++) {
    numVowels = 0;
```

```
        for (int j = 0; j < vowels.length; j++) {
            if ((input.charAt(i)) == vowels[j]) {
                numVowels++;
                out.print("_");
            }
        }
        if (numVowels == 0) {
            out.print(input.charAt(i));
        }
    }
```

d. Prints the number of vowels in the String:

```
char[] vowels = { 'a', 'e', 'i', 'o', 'u' };
int numVowels = 0;
out.print("Enter a string: ");
String input = in.nextLine();
for (int i = 0; i < input.length(); i++) {
    for (int j = 0; j < vowels.length; j++) {
        if ((input.charAt(i)) == vowels[j]) {
            numVowels++;
        }
    }
}
out.println("The number of vowels is: " + numVowels);
```

e. Prints the position of all vowels in the String:

```
char[] vowels = { 'a', 'e', 'i', 'o', 'u' };
out.print("Enter a string: ");
String input = in.nextLine();
for (int i = 0; i < input.length(); i++) {
    for (int j = 0; j < vowels.length; j++) {
        if ((input.charAt(i)) == vowels[j]) {
            out.println("The vowel " + input.charAt(i)
                    + " is at position: " + i);
        }
    }
}
```

2.

a.

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
```

b.

[1, 1, 2, 3, 4, 5, 4, 3, 2, 1]

c.

[2, 3, 4, 5, 4, 3, 2, 1, 0, 0]

d.

[0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

e.

[1, 3, 6, 10, 15, 19, 22, 24, 25, 25]

f.

[1, 0, 3, 0, 5, 0, 3, 0, 1, 0]

g.

[1, 2, 3, 4, 5, 1, 2, 3, 4, 5]

h.

[1, 1, 2, 3, 4, 4, 3, 2, 1, 0]

3. Java code for a loop that simultaneously computes both the maximum and minimum of an array of ints called a:

```
    //initializes to lowest/highest possible
    //integer such that the algorithm
//functions for all possible integer
//values in the array.
int max = -2147483648;
int min = 2147483647;
for (int i = 0; i < a.length; i++) {
    if (a[i] <= min) {
        min = a[i];
    }
    if (a[i] >= max) {
        max = a[i];
    }
}
out.println("min is: " + min);
out.println("max is: " + max);
```

4. Java code for a loop that sets boolean variable isOrdered to true if the elements of a given array of ints called a are in non-decreasing order, otherwise it sets isOrdered to false:

```
int currentMax = a[0];
boolean isOrdered = true;
int i = 0;
while ((i < a.length) && (a[i] >= currentMax)) {
    currentMax = a[i];
    i++;
}
if (i < a.length) {
    isOrdered = false;
}
```

5.

a.

b.

i.

```
true
```

ii.

```
breakfast_menu
```

iii.

```
4
```

iv.

```
false
```

v.

```
<food calories="630">
  <name>Blueberry Pancakes</name>
  <price>$4.95</price>
</food>
```

vi.

```
true
```

vii.

```
food
```

viii.

```
2
```

ix.

```
true
```

x.

```
630
```

xi.

```
true
```

xii.

```
false
```

xiii.

Blueberry Pancakes

c.

```
<breakfast_menu>
  <food calories="650">
    <name price="$5.95">Belgian Waffles</name>
  </food>
  <food calories="630">
    <name price="$4.95">Blueberry Pancakes</name>
  </food>
  <food calories="600">
    <name price="$4.50">French Toast</name>
  </food>
  <food calories="950">
    <name price="$6.95">Homestyle Breakfast</name>
  </food>
</breakfast_menu>
```

d.