

# Object Oriented Programming

## TDA547, DAT170

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These are example questions similar but not equivalent to those that will be given on the actual exam.

1. The following method is supposed to check whether `x` appears as an element in the array `a`. It will compute the right answer but its loop does too many iterations. How would you fix that?

```
public static boolean isElem(int[] a, int x) {
    boolean found = false;
    for (int i = 0; i < a.length; i++) {
        if (a[i] == x) {
            found = true;
        }
    }
    return found;
}
```

2. Implement the method:

```
public static boolean isSubsequence(int[] s1, int[] s2)
```

which returns `true` if `s2` appears in `s1` as a subsequence. In all other cases it should return `false`. For example `{2,5}` is a subsequence of `{3,2,5}`, because you can find 2 and 5 in the same order and next to each other in `{3,2,5}`. `{3,5}` is not subsequence because between 3 and 5 there is the number 2.

3. In this question we implement a simplified authentication system. This will be a class called `Accounts` which has three methods:

```
public static String generatePassword(int min, int max)
public String register(String userName)
public boolean authenticate(String userName,
                           String password)
```

- `generatePassword` generates a random password each time when it is called. The password is a word with a random length from `min` to `max` characters. Each of the characters in the string should be a random letter from the latin alphabet, i.e. 'a'..'z'.
- `register` takes as input a new user name, creates a random password for it and returns it. If the user name has already been registered, then you should return `null`. The generated password should be from 4 to 10 characters long. The method should also store the password for every registered user, so that later we can use the password for authentication.
- `authenticate` takes a user name and password and it returns `true` if the user has been registered and the password matches the one that was generated during the registration. In all other cases the method should return `false`.