

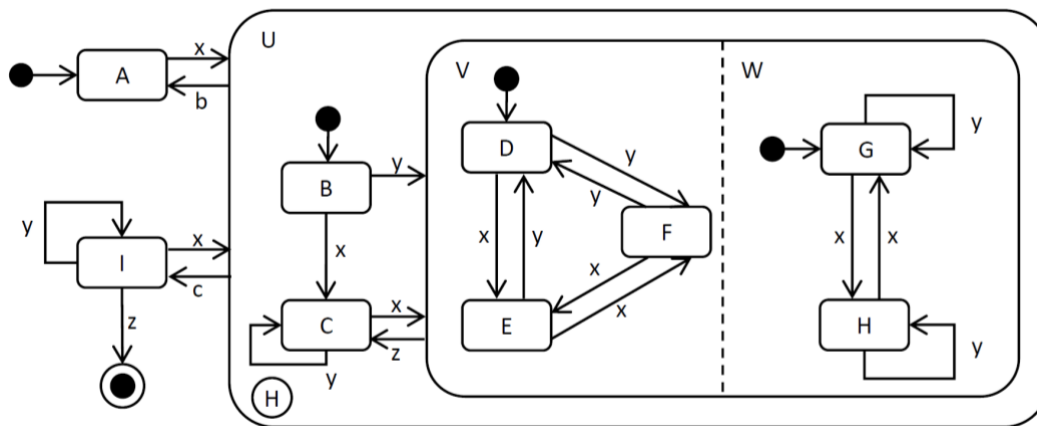
Introduction to Software Engineering

Assignment 5 (10 + 2 bonus pts)

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Title page: Create a title page with "Introduction to Software Engineering", "Assignment 5", your name, and date of completion.

Problem 1: Given the following state chart (6pts)



- List the states visited for inputs x, y, x, y, y, z, b, x, y, c, y, x (2 pts)
- List the states visited for inputs x, x, x, x, x, z, x, y, x, x (2 pts)
- transform the automaton into an equivalent, parallel one without history attribute (4 pts).

Problem 2 (4 pts): For the following classes and interfaces, indicate briefly which secret is being hidden (or will be hidden in case of an interface), and how.

- java.io.Closeable
- java.lang.Comparable<T>
- java.util.List
- java.util.Locale

Problem 3 (2 bonus points): Your colleagues at Pear Corp have run into a strange situation. Since you are coming from KIU and are reputed of solving the toughest problems, they have come to you during coffee break. They have already printed out the relevant code fragments. (SS20)

class AppPrototype:

```
01: public static void main(String[] args) {
02:
03:     List<String> e1 = new EmployeeManagementPrototype().generateInitialEmployeeList();
04:     e1.add("Martina Mustermann");
05: }
06: }
```

class IEmployeeManagement:

```
07: public interface IEmployeeManagement {
08:
09:     /**
10:      * Generates the initial list of employees. Each employee is represented as a String
11:      * (Given Name(s), Last Name). New employees (Strings) may be added or removed from
12:      * this List.
13:      * @return the initial list of employees
14:      */
15:     List<String> generateInitialEmployeeList();
16: }
```

class EmployeeManagementPrototype:

```
17: public class EmployeeManagementPrototype implements IEmployeeManagement {
18:
19:     @Override
20:     public List<String> generateInitialEmployeeList() {
21:         return List.of("Martin S. Pinner", "Marvin Bertsch", "Max Power");
22:     }
23: }
```

The above code violates Liskov's substitution principle. Describe where and why the violation occurs. Note: it is not enough to look at parameter types.