**CSIT314 Software Development Methodologies**

**Lab 3**

**Task 1**

Using a UML tool of your choice, develop an UML class diagram to express the structural relationships in the following program and draw an UML **sequence diagram** and **communication diagram** to express the dynamic behaviour. **Make sure all the diagrams be consistent with each other and the code.**

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| **import** java.util.Vector;  **public class** App {     **public static void** main(String[] args){         Driver d = **new** Driver();         d.run();     } }  **public class** Driver {     **private** StringContainer b = null;       **public void** run() {         b = **new** StringContainer();         b.add("One");         b.add("Two");         b.remove("One");     } } **class** StringContainer {     **private** Vector v = null;      **public void** add(String s) {         init();         v.add(s);     }      **public boolean** remove(String s) {         init();         **return** v.remove(s);     }      **private void** init() {         **if** (v == null)             v = **new** Vector();     } } |

**Task 2**

Use a UML tool of your choice to draw a state diagram of the following watch:

*Consider a watch with two buttons. Setting the time on the watch requires the actor to first press both buttons simultaneously, after which the watch enters the set time mode. In the set time mode, the watch blinks the number being changed (e.g., the hours, minutes, seconds, day, month, or year). Initially, when the actor enters the set time mode, the hours blink. If the actor presses the first button, the next number blinks (e.g, if the hours are blinking and the actor presses the first button, the hours stop blinking and the minutes start blinking). If the actor presses the second button, the blinking number is incremented by one unit. If the blinking number reaches the end of its range, it is reset to the beginning of its range (e.g., assume the minutes are blinking and its current value is 59, its new value is set to 0 if the actor presses the second button). The actor exits the set time mode by pressing both buttons simultaneously.*

**Task 3**

Use a UML tool of your choice to draw a state diagram showing the states and transitions for a landline telephone. Include the states **hung-up**, **off-hook, dialing, connected,** and **ringing**. Include the events **pick up, hang up,** and **dial**.