**HW to Chapters 14 “Java GUI - Swing” (as in lectures)**

**Non-programming Assignment**

**1) How can we add GUI to a Java program?**

To add a Graphical User Interface (GUI) to a Java program, you can use Java's built-in libraries such as Swing or JavaFX. These libraries provide a set of GUI components like buttons, text fields, and frames to build the interface. You create GUI elements as objects, set their properties, and add them to containers which are then added to the main window (JFrame). Event listeners are used to make the interface interactive.

**2) What is AWT - Abstract Windowing Toolkit?**

AWT, or Abstract Windowing Toolkit, is Java's original platform-independent windowing, graphics, and user-interface widget toolkit. AWT components are rendered by the native platform's GUI toolkit and thus have a look and feel that is native to the system. However, AWT is considered heavyweight because its components are wrappers for native GUI components.

**3) What is Swing?**

Swing is a part of Java Foundation Classes (JFC) and provides a more sophisticated set of GUI components than AWT. Unlike AWT, Swing components are not rendered by the native toolkit but are written entirely in Java, which makes them platform-independent. Swing offers a wider range of components and a more flexible MVC (Model-View-Controller) architecture, allowing for a greater degree of customization. Swing components (prefixed with **J**, like **JButton**, **JTable**, etc.) are lightweight compared to AWT and can be customized by changing the look-and-feel and behavior of UI elements.