**Question:**

Describe the concepts of messaging, events, and listeners as they relate to developing GUI applications within java. As part of your discussion include a description of the role of event handlers.

**Answer:**

Messaging is the communication of different components of a computer system (including the program and the user interface) with each other. Messages themselves can be events. Various triggers can cause the generation of the ‘event’, which is essentially the action itself. There are then event ‘listeners’ (which is used interchangeably by some with event ‘handlers), who are responsible for responding to the event.

A greater distinction between listeners and handlers is given by the following, provided by Stackoverflow (Jan 2011):

**“A listener** is an object that subscribes for events from a source. Cf. the [observer pattern](http://en.wikipedia.org/wiki/Observer_pattern). Usually you can have many listeners subscribing for each type of event, and they are added through **add**XyzListener methods.”

Example: The [MouseListener](http://docs.oracle.com/javase/7/docs/api/java/awt/event/MouseListener.html) in the Java API.

**“A handler** is an object that is responsible for handling certain events. A typical scenario would be to provide a handler for a specific event/task as an argument to a constructor, or set the handler through a **set**XyzHandler method. In other words, you usually have one handler for each type of event.”

Example: The [MemoryHandler](http://docs.oracle.com/javase/7/docs/api/java/util/logging/MemoryHandler.html) in the Java API.

**References:**

What's the difference between Event Listeners & Handlers in Java? (n.d.). Retrieved from https://stackoverflow.com/questions/4725241/whats-the-difference-between-event-listeners-handlers-in-java