

CMSC 435 (Section 0201) : Quiz 8

1. **Please remember to write your name and SSN on this sheet before handing it in.**
2. What are event flow graphs? How are they used for coverage evaluation of GUI test cases?

The events within a modal dialog form a GUI component. A GUI component may be represented as an *event-flow graph*.

Definition: An event-flow graph for a GUI component C is a 4-tuple $\langle \mathbf{V}, \mathbf{E}, \mathbf{B}, \mathbf{I} \rangle$ where:

- (a) \mathbf{V} is a set of vertices representing all the events in the component. Each $v \in V$ represents an event in C .
- (b) $\mathbf{E} \subseteq \mathbf{V} \times \mathbf{V}$ is a set of directed edges between vertices. We say that event e_i follows event e_j iff e_j may be performed *immediately* after e_i . An edge $(v_x, v_y) \in \mathbf{E}$ iff the event represented by v_y follows the event represented by v_x .
- (c) $\mathbf{B} \subseteq \mathbf{V}$ is a set of vertices representing those events of C that are available to the user when the component is first invoked.
- (d) $\mathbf{I} \subseteq \mathbf{V}$ is the set of restricted-focus events of the component.

Each such GUI component can be tested in isolation. The event flow graph that represents such a GUI component can be used to both generate test cases for the component and to evaluate coverage of these test cases. Some commonly used criteria include event coverage (the number of nodes in EFG that are covered by a test suite), event-interaction coverage (the number of edges in the EFG that are covered by a test suite) and length- n event-sequence coverage (which corresponds to covering all paths of length $\leq n$ in the EFG).