Model-Based Testing (DIT848 / DAT260) Spring 2013

Lecture 7 Graph Theory Techniques in MBT

Gerardo Schneider Department of Computer Science and Engineering Chalmers | University of Gothenburg

Outline

- <u>Graph Theory Techniques in Model-Based Testing</u>, by, Harry Robinson
- Interactive exercises

Euler Graph



Is it an Euler Graph?

Answer: No, not possible to traverse all the edges without repetition (nodes A and B have an odd number of links)

Groups 2-5 persons: 5 min

Postman Problem



New York Street Sweeper



Groups 2-5 persons: 10 min

New York Street Sweeper



Groups 2-5 persons: 10 min

New York Street Sweeper



Solution: afbgea'ce'de" (we only use existing "streets")

Groups 2-5 persons: 10 min

Testing Combination of Actions



Solution: Transform the graph using de Brujin's algorithm (dual agraph) Groups 2-5 persons: 10 min

Testing Combination of Actions

Solution

Problems: e -"Forgot" transition f->b - Need to "Eulerize" the resulting graph

Groups 2-5 persons: 15 min

Testing Combination of Actions

e

Solution

(Complete)

10 Groups 2-5 persons: 15 min

h

Testing under a Time Deadline





• Read the paper:

Graph Theory Techniques in Model-Based Testing, by Harry Robinson (Presented at the 1999 International Conference on Testing Computer Software)

 If you are interested you can visit the <u>Chinese Postman Algorithm by Harold Thimbleby</u> homepage. It contains an implementation and a paper describing it