

Cpt S 422: Software Engineering Principles II

Black-box testing – Part 6: Exercises

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Equivalence Class Partitioning Testing

Equivalence Class Partitioning example

- ❑ Function $f(c,t)$ is used to control traffic lights
 - c is a color: {RED, YELLOW, GREEN}
 - t is time in seconds
 - The maximum time for the same color is 2 minutes
 - If there is a problem with the parameters the function is expected to signal an error

- ❑ Tasks
 - Analyze the problem using the method Equivalence Class Partitioning
 - Provide test frames and cases for the WECT (weak criterion)
 - Provide test frames and cases for the SECT (strong criterion)

Boundary Value Analysis Testing

Boundary Value Analysis Example

- ❑ Consider again the function $f(c,t)$ is used to control traffic lights
 - c is a color: {RED, YELLOW, GREEN}
 - t is time in seconds
 - The maximum time for the same color is 2 minutes
 - If there is a problem with the parameters the function is expected to signal an error

- ❑ Tasks
 - Consider the solution you provided for Equivalence Class Testing and re-analyze the problem adding the method Boundary Value Analysis
 - How many test cases would you have now with WECT and SECT?

Category-Partition Testing

Category Partition - Tax Calculation Example

❑ Rules

➤ Tax calculation

- ✓ If salary \leq \$15,000: no tax
- ✓ If salary \leq \$50,000: 25% tax
- ✓ If salary $>$ \$50,000: 45% tax

➤ Tax discount

- ✓ If 1 child: 2% tax discount
- ✓ If 2 children: 5% tax discount
- ✓ If 3 children: 7% tax discount
- ✓ If 4 children: 10% tax discount
- ✓ No discount if salary $>$ \$80,000

❑ Tasks:

1. Analyze the problem using the Category-Partition method
2. Provide test frames and cases that satisfy AC (All Combinations)
3. Provide test frames and cases that satisfy BC (Base Choice)

Logic Functions Testing - examples

Variable Negation Strategy - Boiler Example

❑ $Z = AB\sim C + AD$

❑ Steps:

1. Identify unique true points
 2. Identify near false points
 3. Generate the variant set matrix and select test suite by covering all candidate sets
- Because one variant may belong to more than one candidate set, the number of tests required can be less than the number of candidate test sets