CS 3750 Application 01: Black-Box Testing

Objective
This assignment will give you practice using each of the three strategies we have seen for black-box testing.

Directions
Answer the following questions regarding black-box testing. Submit either an electronic copy of your responses by e-mail to andrew.berns@uni.edu or a physical copy of your responses to me in class. The recommended due date is Friday, February 9.

Questions

Equivalence Partitioning
1. Give the partitions you would create for testing the following specification.
   Imagine a system meant to monitor the mosasaurus tank. The system is meant to alert Jurassic World workers when the conditions “require attention”. Specifically, the system takes two integer inputs, which are described below.
   (a) The first parameter is the temperature of the water (in degrees Celsius). Valid readings are between 0 and 100 (inclusive). If an invalid reading is received, an “Invalid Sensor” exception occurs.
      i. Valid readings are used to determine if the water is within an acceptable range. The acceptable range for the mosasaurus is between 30 and 40 degrees. If it is too cold, a “Too Cold” message is displayed. If it is too hot, a “Too Hot” message is displayed.
   (b) The second parameter is the pressure at the bottom of the tank (in kiloPascals). Valid readings are between 10 and 1000 (inclusive). Invalid readings result in an “Invalid Sensor” exception.
      i. Provided the reading is valid, the pressure is used to determine the water level and tank occupancy. A “Water Low” message is displayed if the valid pressure is below 537. A “Tank Intrusion” message is displayed if the pressure is above 539.

2. What level of testing (weak or strong, normal or robust) would you use for this system and why? What partitions would be included in your selected level?

Boundary Value Analysis
3. Select a “nominal” partition from the set of partitions you created in Question 1. For this nominal partition, give a test case that would be generated using:
   (a) weak normal testing
   (b) weak robust testing but not weak normal
   (c) strong normal testing but not weak robust
   (d) strong robust testing but not strong normal
4. Create a decision table for the decision-making process described below.

As Jurassic World deals with a group of dangerous animals, a formal decision-making process is in place for determining actions to take when things inevitably go awry in Academy Award-winning fashion. Consider the following excerpt of their operations manual. Note the items are not mutually exclusive!

(a) If no carnivore has escaped and the combined mass of the escaped dinosaurs is less than 1000 kilograms, the park will take no action – it’s a feature, not a bug!

(b) If at least one carnivore has escaped but the combined weight of the escaped dinosaurs is below 1000 kilograms, evacuate the park visitors.

(c) If the combined mass of the escaped dinosaurs is less than 2500 kilograms, call the Asset Containment Unit (ACU).

(d) If the combined mass of the escaped dinosaurs is at least 2500 kilograms, abandon the entire island in an “every person for themselves” fashion.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No carnivore escaped &amp; total mass &lt; 1000 kg</td>
<td>No action – it’s a feature, not a bug!</td>
</tr>
<tr>
<td>At least 1 carnivore escaped &amp; total mass &lt; 1000 kg</td>
<td>Evacuate the park</td>
</tr>
<tr>
<td>Total mass &lt; 2500 kg</td>
<td>Call Asset Containment Unit (ACU)</td>
</tr>
<tr>
<td>Total mass ≥ 2500 kg</td>
<td>Abandon island in “every person for themselves” fashion</td>
</tr>
</tbody>
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