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CS 362 – HW 3 Theories

Week 5 – Random Testing

For this document, you will need to fill out the information below. Ensure you have 5 triggering numbers for each bug or you will receive zero points for the bug. Your theory must fit the 5 provided numbers to receive any points. To receive full points, your theory must match the actual coded error, so you may need more than 5 data points for each bug to successfully determine the causes.

- **Bug 1**
  - **Triggering credit card numbers (at least 5)**
    - 8877568579008417
    - 8671225165798277
    - 9124401265349169
    - 6409537119256266
    - 1982489595749321
  - **Theory that explains what triggered the bug**
    - My theory is that the card numbers hold the correct length and correct Luhn number, but the incorrect prefix for the given card companies.
- **Bug 2**
  - **Triggering credit card numbers (at least 5)**
    - 4052383597205888
    - 4052914160109436
    - 4052134466160674
    - 4052706516947802
    - 4052097828308994
  - **Theory that explains what triggered the bug**
    - My theory here involves Visa cards and that the length and Luhn number are correct but the card must be invalid if the first four digits are “4052”.
- **Bug 3**
  - **Triggering credit card numbers (at least 5)**
    - 376991889914939
    - 370984309603253
    - 345739694397743
    - 375628990518693
    - 341491549732823
  - **Theory that explains what triggered the bug**
    - My theory here involves American Express cards and that if the length and Luhn number are correct, but the last number is an *odd* number, then the card must be invalid.

- **Bug 4**
  - **Triggering credit card numbers (at least 5)**
    - 4066688784564066
    - 4246994016554246
    - 4990463311284990
    - 5185719379225185
    - 4387867212744387
  - **Theory that explains what triggered the bug**
    - Although there are a couple correct card numbers within the entire group of given numbers, my theory here is that Visa and MasterCard cards are invalid if they contain the correct length and prefix, but an incorrect Luhn number.
- **Bug 5**
  - **Triggering credit card numbers (at least 5)**
    - 4883590111187732
    - 4648717342181111
    - 2238388654811115
    - 2711110032284377
    - 4138762020911113
  - **Theory that explains what triggered the bug**
    - My theory is that even if the lengths, prefixes, and Luhn numbers for Visa and MasterCard are all correct, if there occurs 4 consecutive “1’s” anywhere in the number, then the entire card number must be invalid.