Lab 13
Part C – Prioritization Activity
Description

- In this module, you will evaluate three different computing platforms based on six digital design evaluation metrics individually, in pairs, and then in larger groups.

Procedure

1. In this activity, you will consider six digital design evaluation metrics (throughput, latency, modularity, power, area on chip, and clock period/speed) for three different computing platforms (desktop, laptop, and smartphone), as well as three different types of hardware units (main processor, graphics processing unit (GPU), and peripherals/user interface)

Individual Stage

2. Individually, make a copy of the following template spreadsheet: https://docs.google.com/spreadsheets/d/174m_wUaUfbZWn1l_i5ikv575c4XfhMUK8Sxdcz btmw4/edit?usp=sharing
   - Do not yet look at the "Baseline" sheet.
3. Consider the types of applications that each hardware unit supports. Then, for each hardware unit, individually rank each of the six aforementioned metrics by priority in the sheet titled `Individual Scores and Calcs`.
   - Use 6 for the most important (highest priority) evaluation metric to the hardware unit on the computing platform, and 1 to the least important (lowest priority) metric.

Lab Group Stage

4. Now, convene with your lab group (pair or trio) to discuss your rationale for each case. Suspend your initial judgments, and first hear out your fellow students.
   - Together, reach a consensus on the prioritization metrics, and record it in the `Pairwise` sheet.
   - You are welcome and recommended to have one individual share their sheet with the rest of the group.
     - After reaching consensus, the others should copy the results to their sheets.

Large Group Stage

5. Join with another lab group to repeat Step 4 with a larger group. Collectively reach a consensus and record your results in the `Group` sheet.
   - Similarly, you may have one individual share their sheet with both lab groups, and later copy the results to each individual member's sheet.

Reflection

6. First, examine (as a large group, if time permits) how much your prioritization scores changed between the individual, pairwise, and group stages using the baseline calculations created by Drs. LeBlanc and Hassan, provided in the `Individual Scores and Calcs` sheet.
7. Individually, write a half to one page reflection:
   - In one paragraph, discuss the rationale your group used in the final prioritization scores.
     - Note anything unique about the application that the specific hardware unit or computing platform that led to key decisions in the prioritization.
   - In a second paragraph, discuss how the prioritization scores for the evaluation metrics changed from the individual stage, to the pairwise stage, and finally to the large group stage.
     - Also discuss how the difference between your scores and the baseline scores changed from the individual step, to the individual stage, to the pairwise stage, and finally to the large group stage.
     - Essentially, discuss how your scores changed from each step and from the baseline, and why.
       - This is where you examine how the prioritization scores changed. Did the delta between steps increase, decrease, or not change? Did the delta between your scores and the baseline increase, decrease, or not change?

Deliverables

- Include as part of your **informal report**:
  - Your completed Google sheet as `.xlsx` or `.pdf` (Steps 2-6)
  - Your individual reflection (Step 7)

Grading

- The file `13C-rubric.xlsx` contains a detailed rubric for the deliverables of this lab module. Below is a summary of the rubric criteria. Think of this list as a checklist – do all of the following:
  - Complete and submit your spreadsheet including all of your scores from each stage.
  - Complete and submit your half to one page reflection, which:
    - Considers multiple unique aspects of the hardware units/computing platforms in paragraph 1.
    - Makes clear arguments for prioritization of factors based on hardware applications in paragraph 1.
    - Clearly and accurately describes how prioritization scores changed between steps in paragraph 2.
    - Clearly and accurately describes how difference with baseline changed between steps in paragraph 2.

Outcomes

- Practice evaluating competing hardware designs based on a set of metrics.
- Understand ramifications of digital system design decisions (eKSO 2a).