FIT3155: Lab questions for week 4

Objectives: Understanding Ukkonen's algorithm for suffix tree construction. **Notes:** It is advised that you implement Ukkonen's algorithm step-by-step as suggested below. After each step, test your implementation on simple string inputs.

1. Implement Ukkonen's algorithm for suffix tree construction without any optimizations/speed-ups/tricks. (Refer to slide 16 from your lecture slides.)

2. Extend the above implementation by computing the suffix links during each phase. (Refer slide 22-23.)

3. Add further, the ability to traverse via the suffix links during suffix extensions in any given phase. (Refer slides 24-28.)

4. Enhance this implementation using the 'skip/count' trick. (Refer slide 29.)

5. If not already done, extend further your implementation using the space-efficient representation of edge-labels. (Refer slide 30.)

6. Add to this, the premature stopping criterion. (Refer slide 31.)

7. Improve this further to handle rapid leaf extensions. (Refer slides 32-36.)

8. Finally, extend this to generate the explicit suffix tree from the implicit suffix tree you have computed for the input string. (This involves a new suffix extension phase, which extends all the suffixes in the implicit suffix tree by the terminal '$' character). (Refer slide 37.)

```
-=0=-
 END
-=0=-
```