**CSE 3302: Programming Languages**

**Spring 2021**

**Homework 02**

**Due on February 02, 2021 [ on or before 10:00 pm]**

**Name:**

**1000 number:**

**Date:**

**INSTRUCTIONS**

1. **Do NOT plagiarize.**
2. **No group-work. All work should be your own.**
3. **Do not discuss your work with other students in the class.**
4. **Cite sources where necessary.**
5. **Turn in your word document using Canvas. Do not email your documents.**
6. **Name your document as netid.docx where *netid* is your UTA NetID. If you do not know your NetID, check what it is using NetID Self Service. Your 1000 number is NOT your NetID.**
7. **Try to answer each question within 5-7 lines.**

**Questions:**

**1.** Describe the Difference engine. **[7 points]**

**2.** From the following list, which can be considered as a “general purpose computer”? **[3 points]**

a. Step Reckoner

b. Difference Engine

c. Analytical Engine

**3.** What were the limitations of Harvard Mark 1? How does current technology deal with those problem? **[7 points]**

**4.** Why is Silicon Valley so called? **[3 points]**

**5.** Make boolean logic tables for AND, OR, and XOR (A XOR B). **[9 points]**

**6.** Can we implement XOR gate using only NOT, AND, and OR gates? If yes, how? **[6 points]**

**7.** How many bits would you need to represent 2018 in binary? How many bytes is that? **[5 points]**

**8.** Write “Programming Languages” (excluding the quotes) using ASCII code. **[5 points]**

**9.** What were the shortcomings of Assembly languages? **[7 points]**

**10.** What were the advantages and limitations of ALGOL? **[8 points]**

**11.** What is the difference between parameters and arguments of a procedure? Explain with appropriate examples. **[7 points]**

**12.** Write a recursive factorial function/method in C++ or Java (No limitation on number of lines. **[7 points]**

**13.** Explain Language Syntax and Language Semantics in your own words. **[10 points]**

**14.** Explain how Java codes are compiled and then interpreted. **[10 points]**

**15.** Explain the following terms: **[6 points]**

a. Syntactic sugar

b. API

**Extra credit (bonus question):**

**16.** Do you think that C programming language is a successful programming language even though it’s not the most popular language today? Explain your reasonings. **[10 points]**