CS 3310 – Programming Languages– Fall 2023

Points: 250

This is a group assignment. Form teams of two or three.

Description

The purpose of this assignment is to help students understand

- The importance of why computer science students and professional software developers should study general approaches to language design and evaluation to solve problems
- The most important criteria for evaluating languages are readability, writability, reliability, and overall and on the basis on which we examine and judge the various language features
- Influences of programming language design on problem solving

This is due on December 1st 2023.

Part – 1

Write an algorithm (pseudocode) to do the following conversions. The system should take in as input a number from one number system and convert it to another number system. The converted number should be displayed as output. The pseudocode you write should be in format that is easy to read and understand.

1. Decimal to Binary
2. Binary to Decimal
3. Decimal to Hexadecimal
4. Hexadecimal to Decimal
5. Hexadecimal to Binary
6. Binary to Hexadecimal

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Part – 2

Choose **any three different programming languages** discussed in our textbook to implement the above algorithm.

You can score a BONUS of 50 points if any two of the three programming languages come from atleast two different language categories such as: imperative, functional, and logic.

File to upload: implementation files with the correct extensions

Part – 3

Use the language evaluation criteria listed in our textbook under Chapter 1 Section 1.3 Language Evaluation Criteria to evaluate the three programming languages with respect to solving the above mentioned problem. Tabulate your results and write a brief description explaining your findings.

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Part – 4

Overall, discuss your experience implementing the same problem in three

different programming languages, influences of language design, and discuss how this experience has i) Increased capacity to express ideas (ii) Increased ability to learn new languages, (iii) Better understanding of the significance of implementation, (iv) Better use of languages that are already known, and (v) Improved background for choosing appropriate languages

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Responsibility Table

Fill in the following table to provide the % contribution of each member in the team.

Team Member Name	% contribution
XXXXX	

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Deliverables: To be uploaded to WTCLASS

1. Implementation files **(50 points)**
2. Screen shots of your output (.png images) **(50 points)**
3. Project report that includes the algorithm (pseudocode), finding from Part 3, 4, and Contribution table **(150 points)**