C PROGRAMMING MAJOR PROJECT (CSEG1032)

Number Conversion System (NCS)

Project Overview:

This project implements a console-based Number Conversion System (NCS) in C.

The primary goal is to demonstrate modular program design, number system conversion logic, and clean module separation. The system allows conversion between Decimal, Binary, Octal, and Hexadecimal number systems.

Core Features:

1. Decimal Conversion:

- Converts Decimal → Binary

- Converts Decimal → Octal

- - Ensures valid decimal digit input.

2. Binary Conversion:

- Converts Binary → Decimal

- Converts Binary → Hexadecimal

- - Validates digits (0 and 1 only).

3. Octal Conversion:

Converts Octal → Decimal

4. Hexadecimal Conversion:

- Converts Hexadecimal → Binary

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- 5. Search & Display:

- Displays all performed conversions in the current session.

- Search entries by number type
  (Decimal/Binary/Octal/Hexadecimal).

Mandatory Repository Structure:

NCS_Project/

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|-- src/

| |-- main.c (Main program loop, Menu UI)

| |-- converters.c (Core conversion logic)

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|-- include/

| |-- number_system.h (Structs, constants, prototypes)

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|-- docs/

| |-- ProjectReport.pdf (Full documentation)

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|-- assets/

| |-- Flowcharts, diagrams

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|-- README.md

|-- sample_input.txt

|-- github_link.txt

Compilation and

Execution:

1. Compilation (using GCC): gcc -o main src/*.c -I include -std=c99

2. Execution (Automated Mode):

./main < sample_input.txt

3. Execution (Interactive Mode):

./main