PORTFOLIO#3

NUMBER SYSTEMS

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OVERVIEW

What are Number systems?

A number system is a structured method of representing numbers using a set of symbols (digits). It defines how digits are used to express quantities, perform arithmetic operations, and encode information.

Every number system is based on a radix (base), which tells how many unique digits it uses.

Number systems are essential in mathematics, computing, engineering, digital electronics, and everyday life.

TYPES OF NUMBER SYSTEMS

DECIMAL NUMBER SYSTEM (BASE 10)

- Uses digits 0–9
- Most commonly used in daily life
- Positional (place value depends on powers of 10)

BINARY NUMBER SYSTEM (BASE 2)

- Uses digits 0 and 1
- Fundamental in computers
- Represents ON/OFF, TRUE/FALSE, or HIGH/LOW signals

OCTAL NUMBER SYSTEM (BASE 8)

- Uses digits 0–7
- Used in early computing and Unix file permissions

HEXADECIMAL NUMBER SYSTEM (BASE 16)

- Uses digits 0–9 and A–F
- Common in programming and digital circuits
- Helps simplify long binary values

SIGNIFICANCE

Decimal Number System

The decimal number system is important because it is the number system we use every day for counting, money, measurements, and almost all basic math. It is the easiest system for people to understand, which is why it is used in schools, businesses, and daily life.

Binary Number System

The binary system is very significant because it is the main language of computers. Everything a computer does—like processing data, storing files, and running programs—happens using only 0s and 1s. Without binary, modern technology and digital devices would not work.

Octal Number System

The octal system is useful because it gives a shorter way to represent long binary values. It was important in older computer systems and is still used in Unix/Linux file permissions today. It makes certain technical tasks easier and more organized for programmers.

Hexadecimal Number System

The hexadecimal system is highly important in computing because it helps simplify long binary code. Programmers use it for memory addresses, color codes in web design, and debugging programs. It makes computer-related work faster and easier to read.

ANALYSIS

Understanding number systems is an important part of studying ICT because it explains how data is represented and processed inside a computer. Many people only think of the decimal system since it is the one used in daily life, but studying binary, octal, and hexadecimal shows that different systems serve different purposes, especially in technology. Learning these systems helped me see the logic and structure behind how computers actually work.

The binary system, in particular, shows how essential simple concepts can be. Even though it only uses 0 and 1, it is the foundation of all digital operations. Computers, phones, and other devices rely on binary to interpret commands, store files, and perform calculations. This made me realize that modern technology is built from ideas that are simpler than expected, but extremely powerful when applied correctly.

The octal number system was also interesting, even if it's not as commonly used today. What surprised me is that it still has uses in certain systems like Unix permissions. I didn't know numbers like 755 or 644 meant something specific. Learning this made me realize that even "less popular" number systems still have their purpose in the IT field.

The hexadecimal system was a bit confusing at first, especially because it uses letters A to F. I wasn't used to seeing letters mixed with numbers in math. But once I learned how it simplifies long binary values, it made a lot more sense. Hexadecimal makes reading and writing binary easier for programmers. I also found it cool that it's used in things like color codes in web design. I never knew those random-looking codes like #FF5733 were connected to number systems.

Overall, studying number systems helped me understand how computers actually read and manage information, even if some parts were confusing at first. It wasn't the easiest topic, but it showed me that a lot of things in ICT start from simple ideas like binary or hexadecimal. But, I know I'm not going to memorize every conversion perfectly, but I do think this knowledge will matter later on, especially if I end up working in a tech-related job. At the very least, it gives me a basic understanding of how systems work behind the scenes, which is better than just guessing or relying on shortcuts. I just hope that learning these number systems now will make it easier for me to understand more complicated lessons in the future and help me adapt better if I pursue a career in the IT field.

CITATION

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