9

TLE – ICT - CSS

QUARTER 2

Week 2

SCHOOLS DIVISION OF PASAY CITY

Introductory Message

MODULE 3-Q2 GRADE 9

WELCOME TO THE WORLD OF COMPUTER SYSTEM SERVICING

This module covers the two of seven (7) common competencies in Computer System Servicing which will lead you to acquire a National Certificate Level II (NC II). It contains information and suggested learning activities for you to complete. Completion of this module will help you better understand the succeeding module on setting up computer networks.

This module consists of two (2) lessons and (6) six learning outcomes. Each lesson and learning outcome contains other sub-learning outcome and learning activities supported by each instruction sheets. Before you perform the activities read the information in What's New and What is It, to ascertain yourself and your teacher that you have acquired the knowledge necessary to perform the skill required of the particular learning outcome.

The specific competency covered in this module and their schedule of recitation are as follows:

LESSON 3: PERFORMING MENSURATION AND CALCULATION (PMC)

LO 1. Select measuring instruments

LO 2. Carry out measurements and calculations

LO 3. Maintain measuring instruments

LESSON 4: PREPARING AND INTERPRETING TECHNICAL DRAWING (PITD)

LO 1. Identify different kinds of technical drawings

LO 2. Interpret technical drawings

LO 3. Prepare/make changes to electrical/electronic schematics and drawing

Lesson 3 Performing Mensuration and Calculation

What I Need to Know

Learning Competency: Lesson 3: Performing Mensuration and Calculation (PMC)

Learning Outcomes: LO 2. Carry out measurements and calculations

Learning Objectives:

This module contains unit of competency on “PERFORMING MENSURATION AND CALCULATION (PMC)”. This covers the knowledge, skills, attitudes, and values needed in understanding concepts and underlying principles in performing measurements and calculations. At the end of this module, you are expected to:

1. Select appropriate measuring instrument to achieve required outcome.
2. Obtain accurate measurements for job.
3. Perform calculation needed to complete task using the four mathematical fundamental operations: addition (+), subtraction (-), multiplication (x), and division (÷).
4. Use calculation involving fractions, percentages, and mixed numbers to complete workplace tasks; and
5. Self-check and correct numerical computation for accuracy

In the previous lesson, you have learned that computer memory is a physical device capable of storing information. It is important because from the moment you turn on your computer until the time you shut it down, your CPU is constantly using memory.

What is It

Computers use binary - the digits 0 and 1 to store data. The smallest unit of data in computing is called a binary digit, or bit. It is presented by a 0 or 1.

The tiny switch is called a transistor which is activated by the electronic signals it receives. The circuits in a computer's processor are made up of billions of transistors. The digits 1 and 0 used in binary reflect on and off states of a transistor.

Some of your computer files such as software, music, documents, and any other information that is processed by a computer is also stored using binary.

Bits can be grouped together to make them easier to work with. A group of 8 bits is called a byte. 8 bits (b) is equivalent to 1 byte (B) system which is made up of 10 numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. It is the most commonly used numbering system. The logic behind is convenience. We have 10 fingers that we use for counting so it is easier to count with a base 10 numbering system. Therefore, decimal is widely used.

Nibble	- 4 bits (half a byte)
Byte	- 8 bits
Kilobyte (KB)	- 1000 bytes
Megabyte (MB)	- 1000 kilobytes
Gigabyte (GB)	- 1000 megabytes
Terabyte (TB)	- 1000 gigabytes

Most computers can process millions of bits every second. A hard drive's storage capacity is measured in gigabytes or terabytes. RAM is often measured in megabytes or gigabytes.

A number base indicates how many digits are available within a numerical system. The binary system on computers uses combinations of 0s and 1s. In everyday life, we use numbers based on combinations of the digits between 0 and 9. For binary numbers there are only two possible digits available: 0 or 1. The binary system is also known as base 2. Denary or base 10 in counting system is known as decimal. Denary is known as base 10 because there are ten choices of digits between 0 and 9.

Computers use binary codes to represent and interpret letters, numbers, and special characters with bits. A commonly used code is the American Standard Code for Information Interchange (ASCII). With ASCII, each character is represented by a string of bits.

For Example:
Capital letter: F = 01000110
Number: 1 = 00110001

CONVERSION FROM DECIMAL TO BINARY

Conversion can be done by dividing the decimal number by 2 repeatedly until the final result is 0. Divide the number by 2.

1. Compute the quotient and the remainder.
2. Bring down the quotient, divide it by 2, and get the quotient and remainder again.
3. Do it repeatedly until the quotient results to 0.
4. Copy the remainder from bottom to top and that is the binary equivalent.

For example, the decimal number 357 is converted to binary number as follows:

Division	Quotient	Remainder
357 / 2	178	1
178 / 2	89	0
89 / 2	44	1
44 / 2	22	0
22 / 2	11	0
11 / 2	5	1
5 / 2	2	1
2 / 2	1	0
1 / 2	0	1

Binary number is taken from the remainder starting from the last to the start, or in the illustration above, from bottom to top, which is 101100101.

Decimal number 357 is equivalent 101100101 in binary number.

CONVERSION FROM BINARY TO DECIMAL

Conversion can be done by plotting each binary digit value on each column corresponding to its decimal digit value. Each column is the number 2 raised to an exponent. The exponent increases by one from right to left. To get the total value you add the value of those columns tagged as ON or equivalent to 1.

For example, the binary number 101100101 is converted to decimal number as follows:

Exponent	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Value	256	128	64	32	16	8	4	2	1
ON / OFF	1	0	1	1	0	0	1	0	1

Total value = (256+64+32+4+1) = 357.

Binary number 101100101 is 357 in decimal number.

What's More

Directions: Convert the following numbers to their binary equivalents.
Show your solution.

1) 27^{10}

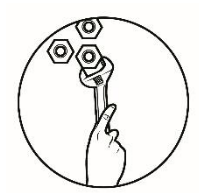
2) 33^{10}

3) 54^{10}

4) 47^{10}

5) 78^{10}

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
128	**64**	**32**	**16**	**8**	**4**	**2**	**1**	**Answer**
1	0	1	0	1	0	0	1	6)
0	0	1	1	0	0	1	0	7)
0	0	1	1	1	0	0	0	8)
0	1	1	0	0	0	1	0	9)
1	1	1	0	1	1	1	0	10)



What I Can Do

Directions: Convert the following numbers to their binary equivalents.
Show your solution.

1) 27^{10}

2) 33^{10}

3) 54^{10}

4) 47^{10}

5) 78^{10}

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
128	**64**	**32**	**16**	**8**	**4**	**2**	**1**	**Answer**
1	0	1	0	1	0	0	1	6)
0	0	1	1	0	0	1	0	7)
0	0	1	1	1	0	0	0	8)
0	1	1	0	0	0	1	0	9)
1	1	1	0	1	1	1	0	10)

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