

Tutorial 5

ET0917 / ET0817 / ET0832

NUMBER SYSTEM AND CODES

Learning Outcome

Define the following numbering systems

- Decimal
- Binary
- Hexadecimal

Capable of converting from one numbering or coding system to another

Define Bit, Byte, Word, Least Significant Bit (LSB) and Most Significant Bit (MSB)

Differentiate data types such as:

- Boolean
- Signed, unsigned Integer
- Word, Double Word
- Float, Real

Q1 - MCQ

Which statement is correct?

- a) 1 byte has 16 bits, 1 word has 32 bits
- b) Floating point is used whenever we need hexadecimal
- c) **2 bytes (16 bits) forms one word, double word has 32 bits**
- d) Modern PLC uses BCD as the default numbering system

Q2 - MCQ

16-bit **Word (W)** would allow a maximum range of: 0 to 65535 as unsigned integer.

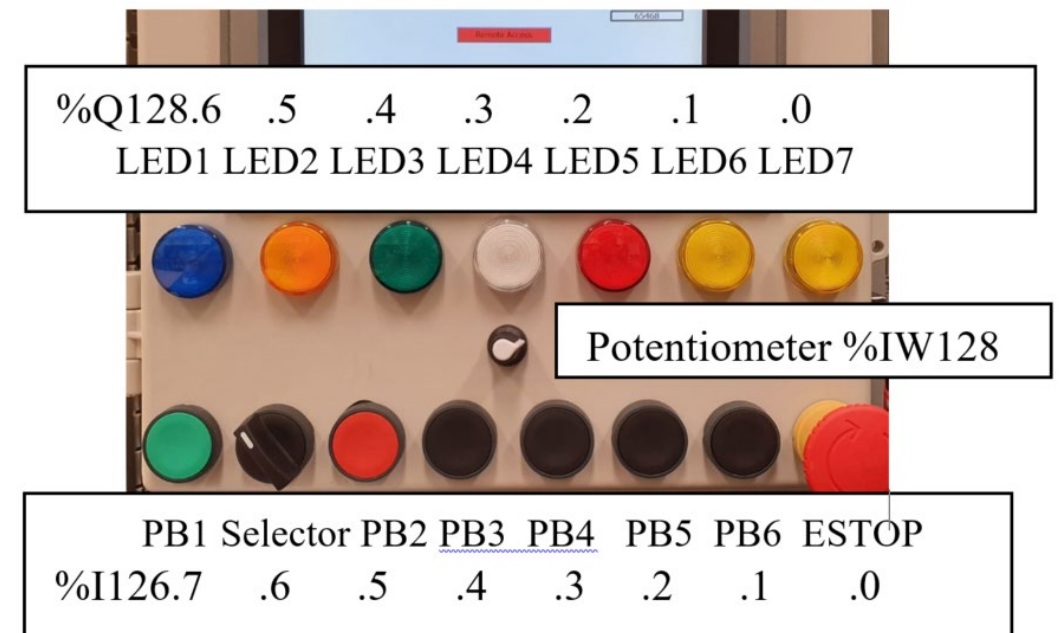
What is the range of a 16-bit integer (signed)?

- a) -128 to 127
- b) 0 to 65535
- c) -65536 to 65535
- d) **-32768 to 32767**

Q3 - MCQ

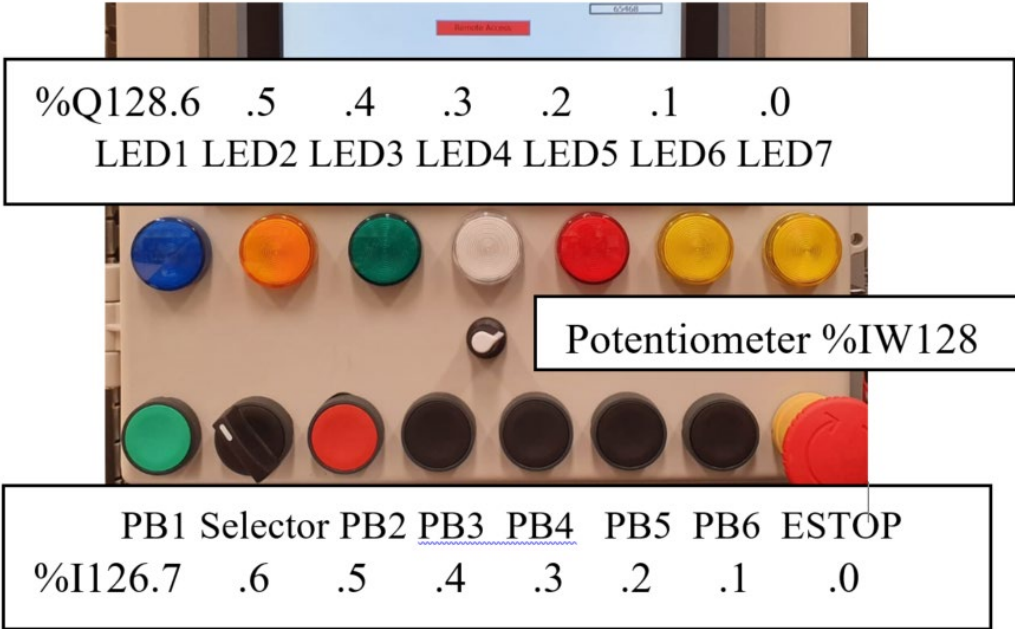
From the PLC, you read the byte %Q128 has hexadecimal value 0x03. Select the correct status:

- a) Only LED1 is on, the rest are off
- b) **LED6 and LED7 are ON. The rest are off**
- c) LED1 and LED2 are ON. The rest are off
- d) E_Stop and PB6 are ON. The rest are off



Q3 – MCQ -ANS

From the PLC, you read the byte %Q128 has hex value 0x03. Select the correct status:

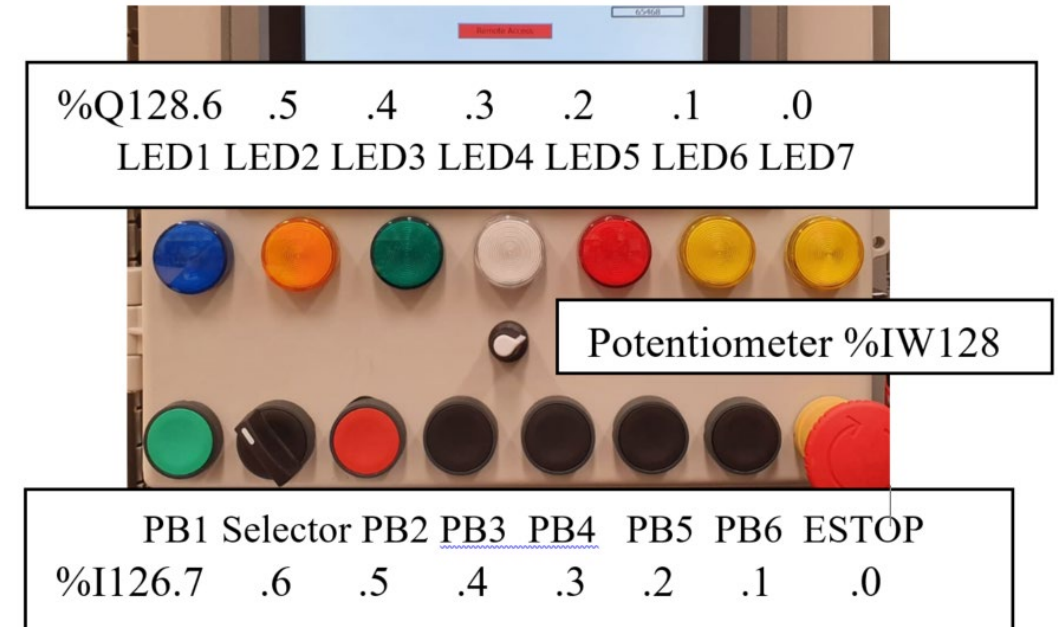


Hexadecimal	Decimal	Binary	BCD
0	0	0000	0000
1	1	0001	0001
2	2	0010	0010
3	3	0011	0011
4	4	0100	0100

Q4 - MCQ

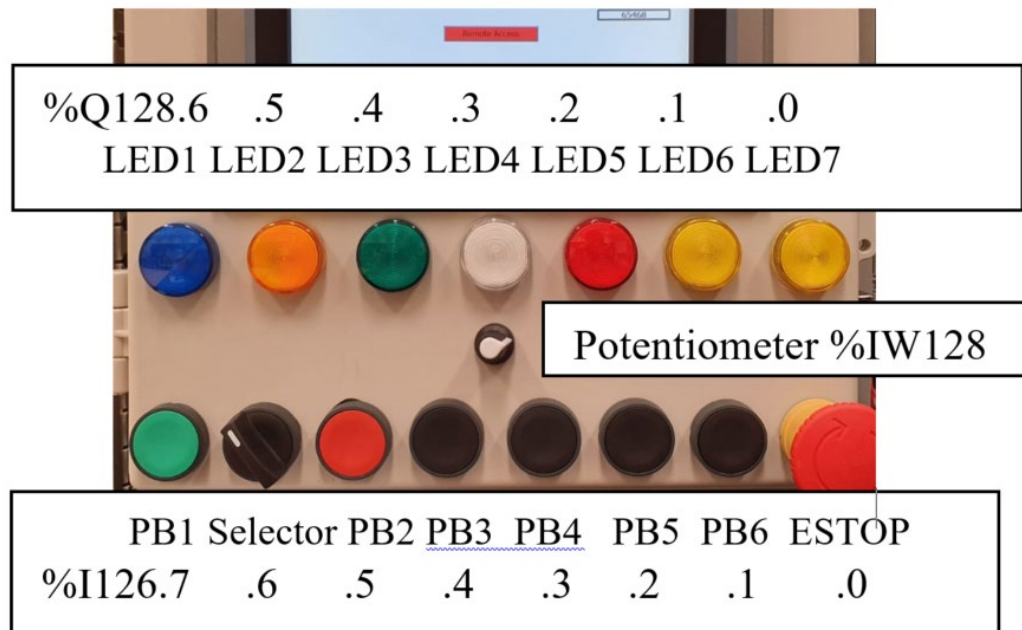
If you need to output “10” in BCD to byte %Q128, which LED would need to light up?

- a) LED2
- b) **LED3**
- c) LED6
- d) LED7



Q4 – MCQ -ANS

If you need to output “10” in BCD to byte %Q128, which LED would need to light up?



Decimal	Binary	BCD
0	0000	0000
1	0001	0001
2	0010	0010
3	0011	0011
4	0100	0100
5	0101	0101
6	0110	0110
7	0111	0111
8	1000	1000
9	1001	1001
10	1010	0001 0000

Q5 - MCQ

When we are going to use Potentiometer with the address as the image. What is the data type that we would be assigning?

- a) Boolean
- b) **Integer**
- c) Long Integer
- d) Floating Point/ REAL

