



Write a self-contained function block in 61131-3 structured text that converts a 10 digit decimal value to hexadecimal.



Below is a self-contained function block in IEC 61131-3 Structured Text that converts a 10-digit decimal value to hexadecimal:

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```
FUNCTION_BLOCK DecToHex
VAR_INPUT
    DecValue : LWORD; // 10-digit decimal value (range: 0 to 9999999999)
END_VAR

VAR_OUTPUT
    HexValue : STRING(10); // Hexadecimal value as a string
END_VAR

VAR
    TempDecValue : LWORD;
    TempHex : STRING(1);
    HexChars : STRING(16) := '0123456789ABCDEF';
    i : INT;
END_VAR

METHOD Convert : BOOL
    HexValue := '';
    TempDecValue := DecValue;

    IF DecValue = 0 THEN
        HexValue := '0';
        Convert := TRUE;
        RETURN;
    END_IF;

    IF DecValue > 9999999999 THEN
        HexValue := 'Error'; // Error in case the input is greater than the range
        Convert := FALSE;
        RETURN;
    END_IF;

    FOR i := 9 TO 0 BY -1 DO
        TempHex := MID(HexChars, 1 + MOD(TempDecValue, 16), 1);
        HexValue := CONCAT(TempHex, HexValue);
        TempDecValue := TempDecValue / 16;
        IF TempDecValue = 0 THEN
            EXIT;
        END_IF;
    END_FOR;

    Convert := TRUE;
END_METHOD

END_FUNCTION_BLOCK
```

To use this function block, instantiate it and call the `Convert` method, passing the 10-digit decimal value as the input. The hexadecimal representation will be stored in the `HexValue` output variable. If the conversion is successful, the method will return `TRUE`, otherwise `FALSE`.

Example usage:

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```
PROGRAM Main
VAR
    MyDecToHex : DecToHex;
    DecimalValue : LWORD := 4294967295; // 10-digit decimal value
    HexadecimalValue : STRING(10);
    ConversionSuccess : BOOL;
END_VAR

ConversionSuccess := MyDecToHex.Convert := DecimalValue;
HexadecimalValue := MyDecToHex.HexValue;
```