

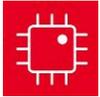
TI-RSLK **MAX**

Texas Instruments Robotics System Learning Kit



Module 3

Quiz: ARM Cortex M Architecture



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Q1 Register Usage

Briefly explain how the following registers are used (assuming AAPCS)

R0-R3,R12

R4-R11

R13

R14

R15

Q2 Condition code bits

Briefly explain how the processor uses the condition code bits

N

Z

V

C

Q3 Conditional

Write an assembly function that returns a true (R0=1) if an ASCII character is a hex digit, otherwise return false (R0=0). Hex digits are 0x30 to 0x39 and 0x41 to 0x46 inclusive. The input character is passed as a value in R0, and the return parameter is returned in R0.

Q4 Conditional

Write a C function to return the absolute value of a number. The input is signed, but the output will be unsigned. The input data is passed as a value in R0, and the return parameter is returned in R0.

Q5 Calculations

Write a C function to calculate the equation

$$y = 1000/x - (3*x+1)/4$$

assuming x and y are 32-bit numbers. Return $y = 0x7FFFFFFF$ ($2^{31}-1$) if the input value is zero, otherwise you can ignore overflow. The input parameter, x, is passed as a value in R0, and the return parameter, y, is returned in R0.

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