COS10004 – Computer Systems

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LAB 7

16.1. Establish the base address of the GPIO registers?

BASE = $3F000000

GPIO_OFFSET = $200000

mov r0, BASE

orr r0, GPIO_OFFSET

16.2. Program GPIO18 for writing?

mov r1, #1

lsl r1, #24

str r1, [r0, #4]

16.3.Set GPIO18 to ON ?

mov r1, #1

lsl r1, #18

str r1, [r0, #28]

16.4. Stop the instruction pointer (program counter) from continuing beyond the executable program code?

loop$

b loop$

20.1. What number bit is set (within the associated 32-bit block) to enable GPIO23 for writing?

#9

20.2. What is the byte offset from GPIO_BASE that this 32-bit block must be written to in memory?

#8

20.3. What number bit is set to set GPIO23 to ON (again within the 32-bit block associated with that GPIO pin)?

#28

20.4. What is the byte offset from GPIO_BASE that this 32-bit block must be written to memory?

$200000

22.1. Which exact snippet of code will need to change compared to turning the LED on?

mov r1, #1

lsl r1, #23

str r1, [r0, #28]

22.2. Provide the alternative code to turn the LED off (again you will need to refer to the GPIO register diagram).

mov r1, #1

lsl r1, #23

str r1, [r0, #40]