Trac Duc Anh Luong - 103488117

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$
```

19. Program GPIO23 for writing and set it ON

```
BASE = $3F000000
GPIO_OFFSET=$200000

mov r0,BASE
orr r0,GPIO_OFFSET

mov r1,#1
lsl r1,#9
str r1,[r0,#8]

mov r1,#1
lsl r1,#23
str r1,[r0,#28]
```

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

```
mov r1,#1
lsl r1,#23
str r1,[r0,#40]
```