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COS10004 - Computer Systems – Lab 7 Submission

Question 16

Question 16.1: Lines of code that establish the base address of the GPIO registers

```
BASE=$3F000000
GPIO_OFFSET=$200000
mov     r0,BASE
orr     r0,GPIO_OFFSET
```

We firstly set two constants: BASE and GPIO_OFFSET.
The *mov* command will perform putting the value of BASE to the register 0
The orr command now made register 0 be equal to $3F200000

Question 16.2: Lines of code that program GPIO18 for writing

```
mov r1,#1
lsl r1,#24
str r1,[r0,#4]
```

Question 16.3: Lines of code that set GPIO to ON

```
mov r1,#1
lsl r1,#18
str r1,[r0,#28]
```

Question 16.4 Lines of code that stop the instruction

```
loop$:
b loop$        ;loop forever
```

Question 19

Question 19.1

```
;Program GPIO23 for writing
mov      r1,#1
lsl      r1,#9
str      r1,[r0,#8]
;Setting it on
mov      r1,#1
```

```
 lsl      r1,#23 ;GPIO 23
 str      r1,[r0,#28] ;correct
```

Question 19.2

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

Question 20

Question 20.1

Number bit set 9-11 are enable GPIO23 for writing

Question 20.2

Register 8 so we begin with offset #8

Question 20.3

Bit set 23 is responsible for turning the LED at GPIO23 on

Question 20.4

Offset #40

Question 22

I decided to turn the LED at GPIO23 off, here is the lines of code to turn it off

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