

Systèmes Embarqués – Microcontrôleur

2020-2021 – Correction

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Question 1

```
1. void init_ports() {  
2.   DDRB |= (1 << 3) + (1 << 2) + (1 << 1) + (1 << 0); // DDRB |= B00001111  
3.   DDRD &= ~(1 << 7);  
4.   PORTD |= (1 << 7);  
5. }
```

Question 2

```
1. int alpha = 100;
```

Le compilateur reconnaît comme variable globale toute variable déclarée en dehors d'une fonction.

Question 3

```
1. void eteint_leds() {  
2.   PORTB &= ~((1 << 3) + (1 << 2) + (1 << 1) + (1 << 0)); // PORTB &= B11110000;  
3. }
```

Question 4

```
1. void vu_metre() {  
2.   eteint_leds();  
3.   if (0 < alpha && alpha <= 25) PORTB |= (1 << 0);  
4.   else if (25 < alpha && alpha <= 50) PORTB |= (1 << 1) + (1 << 0);  
5.   else if (50 < alpha && alpha <= 75) PORTB |= (1 << 2) + (1 << 1) + (1 << 0);  
6.   else if (75 < alpha && alpha <= 100) PORTB |= (1 << 3) + (1 << 2) + (1 << 1) + (1 << 0);  
7. }
```

Question 5

```
1. void setup() {  
2.   init_ports();  
3.   eteint_leds();  
4.   Serial.begin(9600);  
5. }
```

Question 6

```
1. void loop() {  
2.   if (PIND & (1 << 7)) vu_metre();  
3.   else eteint_leds();  
4. }
```

Question 7

```
1. void loop() {  
2.   if (Serial.available()) alpha = Serial.parseInt();  
3.   if (PIND & (1 << 7)) vu_metre();  
4.   else eteint_leds();  
5. }
```

Question 8

flemme