

$$X(z) = \sum_{n=0}^{+\infty} x(n) z^{-n} = \sum_{n=0}^{+\infty} \left(\frac{1}{3}\right)^n z^{-n} = \sum_{n=0}^{+\infty} \left(\frac{1}{3} z^{-1}\right)^n$$

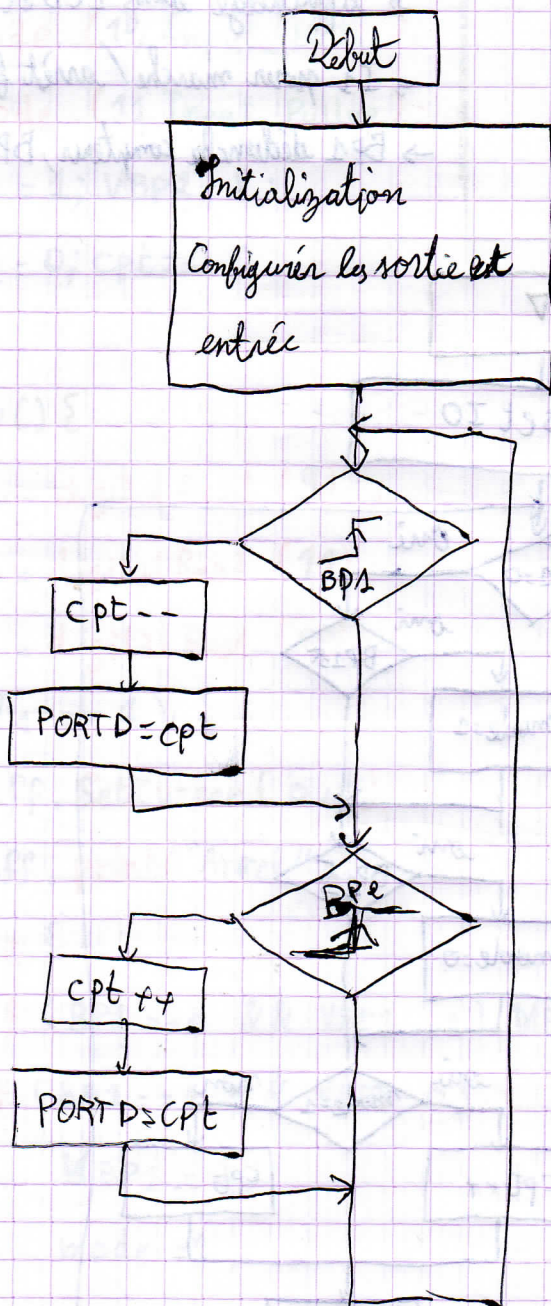
$$= \frac{1}{1 + \frac{1}{3} z^{-1}} = \frac{z}{z + \frac{1}{3}}$$

$y(n)$ à la maison, $z(n)$ à la maison

20/10/2024

S4MC

TD

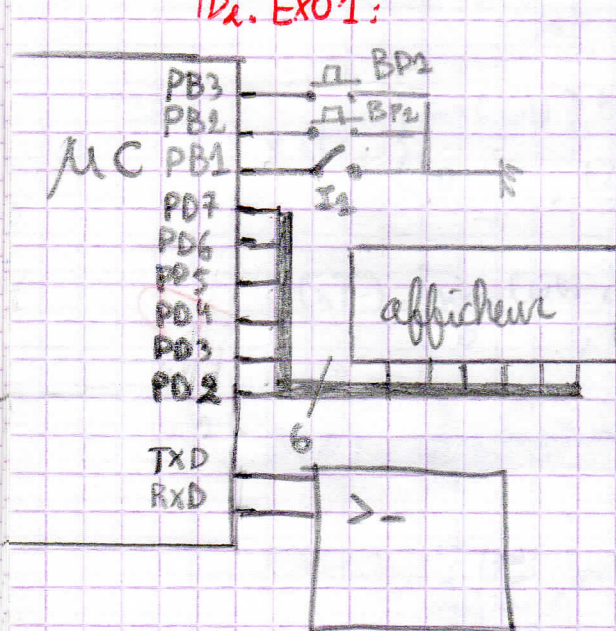


21/10/2024

SAMC

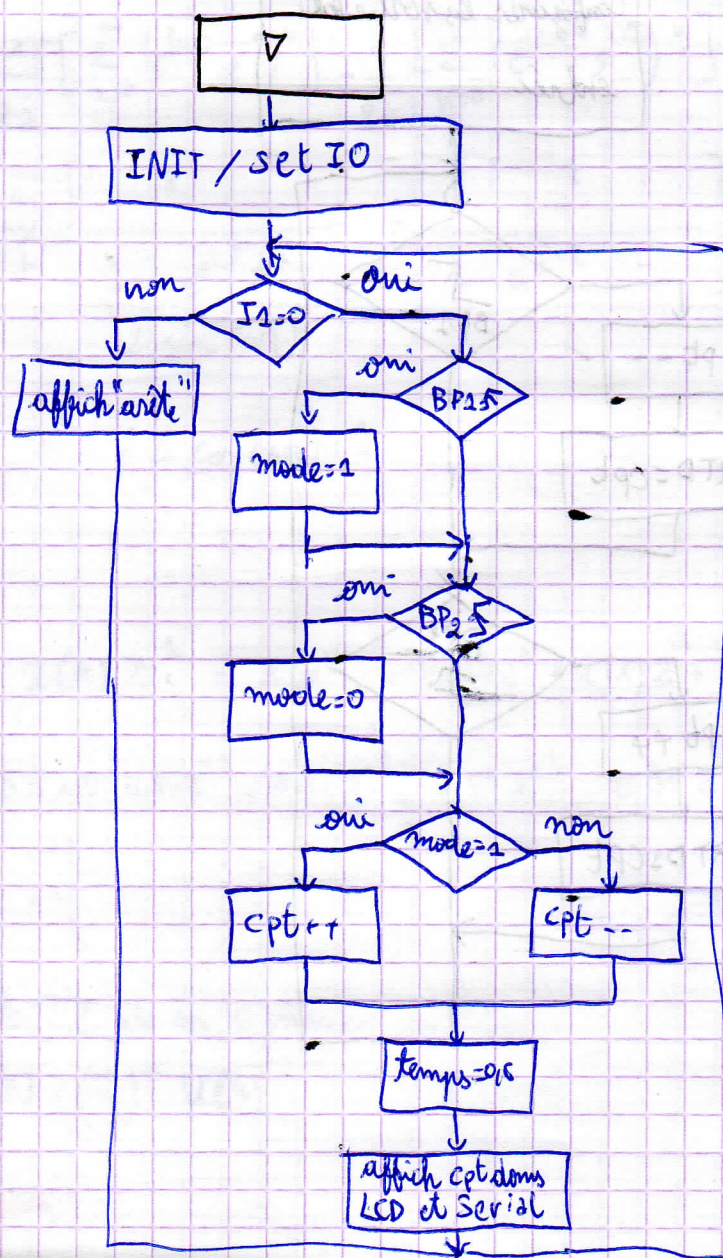
TD

TD. EXO1:



- 2 bouton poussoir → 1 afficheur LCD
- 1 interrupteur → 1 interface Sériale
- 1 μc

- compter / décompter délai 0,5s
- affichage dans LCD et l'interface serial
- I1 pour marche/arrêt fonctionnalité
- BP1 déclenche compteur, BP2 déclenche décompteur




```
#include <LiquidCrystal.h>
```

```
LiquidCrystal lcd(2, 3, 4, 5, 6, 7);
```

```
bool VBP1, VBP2, Mode, BP1, BP2, I1;
```

```
byte cpt;
```

```
void Setup() {
```

```
    lcd.Begin(16, 2);
```

```
    Serial.Begin(15200);
```

```
    pinMode(9, Input_Pullup);
```

```
    pinMode(10, Input_Pullup);
```

```
    pinMode(11, Input_Pullup);
```

```
    VBP1 = 1; VBP2 = 2;
```

```
    Mode = 0; cpt = 0;
```

```
}
```

```
void loop() {
```

```
    I1 = digitalRead(9);
```

```
    VBP1 = digitalRead(11);
```

```
    VBP2 = digitalRead(10);
```

```
    if (I1 == 1) {
```

```
        lcd.setCursor(0, 1);
```

```
        lcd.print("Arret");
```

```
    } else {
```

```
        if (BP1 == 0 && VBP1 == 1) VBP1 = 0;
```

```
        if (BP1 == 1 && VBP1 == 0) {
```

```
            VBP1 = 1;
```

```
            mode = 1;
```

```
        }
```

```
        if (BP2 == 0 && VBP2 == 1) VBP2 = 0;
```

```
        if (BP2 == 1 && VBP2 == 0) { VBP2 = 1; mode = 0; }
```



```

if (mode == 1) cpt++;
else cpt--;
delay(500);
aff.clear();
aff.print(cpt);
Serial.println(cpt);

```

}

}

exercice POO

créer un programme qui fait

$$\sum_{m=0}^N m$$
 après lire N