IFT2105 Devoir1

Samy Rasmy 20214818 Yuchen Hui 20150470

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1 Programme RÉPÉTER et TANQUE

a. Sommaire d'entiers

```
#SOMME D'ENTIERS

repeter r2 fois {
    inc(r5)
    r3    <-    PREMIERK(r5)
    r1 = DIV(r1, r3)
    repeter r1 fois{
        inc(r4)
    }
}

r0    <-    r4
```

b. FRACTRAN

```
#FRACTRAN:
#ON ASSUME QUE LES TABLEAUX SONT INDEXES A PARTIR DE 1 POUR TABLVAL

tant que r5 != r3{
    inc(r5)
    r6    <-     TABLVAL(r1, x)
    r7     <-     TABLVAL(r2, x)
    r8    <-    PGCD(r6, r7)
    r6     <-     DIV(r6, r8)
    r7    <-    DIV(r7, r8)
    si EQ(MOD(MULT(r6, r4), r7), 0) {
        r3    <-    DIV(MULT(r4, r6), r7)
        r5    <-    0
    }
}

r0    <-    r4
```

2 Langage régulier

a. $\Sigma = \{a, b\}$ et $L = \{w \in \Sigma^* || w|_a = 2 \text{ ou } |w|_b = 3\}$

description textuelle:

$M = \{Q, \Sigma, \delta, q_0, F\}$
où
$Q = \{< a_i b_j > | i = 0, 1, 2, 3; j = 0, 1, 2, 3, 4; \}$
$q_0 =< a_0 b_0 >$
$F = \{< a_i b_j > | i = 2 or j = 3\}$
δ est donné par
$\delta(< a_i b_j >, a) =< a_{i+1} b_j >, i = 0, 1, 2; \forall j;$
$\delta(< a_i b_j >, b) =< a_i b_{j+1} >, j = 0, 1, 2, 3; \forall i;$
$\delta(< a_i b_j >, b) =< a_i b_j >, i = 3; \forall j;$
$\delta(< a_i b_j >, b) =< a_i b_j >, j = 4; \forall i;$

Bleu: État initial
Vert: État acceptant

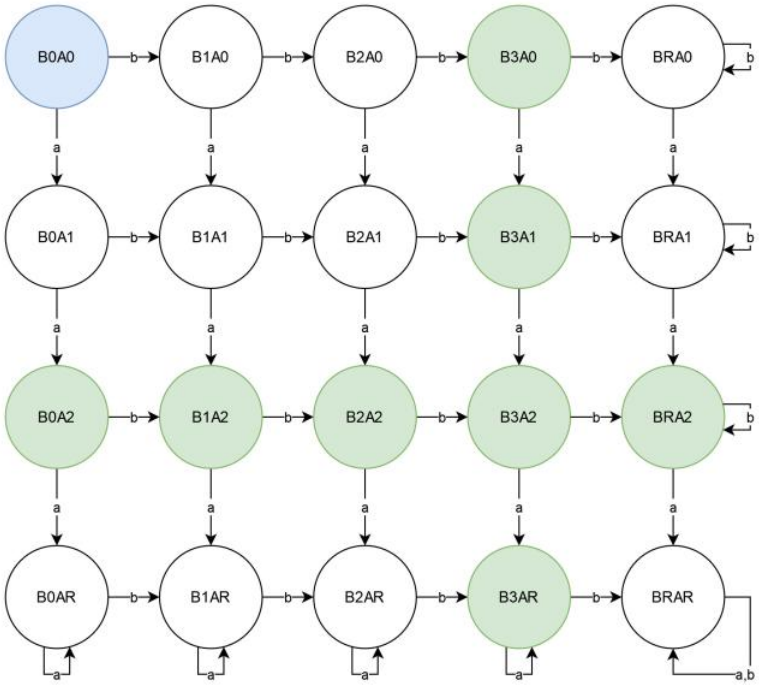

Figure 1: solution 2.a

b. $\Sigma = \{a, b\}$ et $L = \{w \in \Sigma^* || w|_a \equiv |w|_b + 1 (\text{mod} 3)\}$

Bleu: État initial
Vert: État acceptant

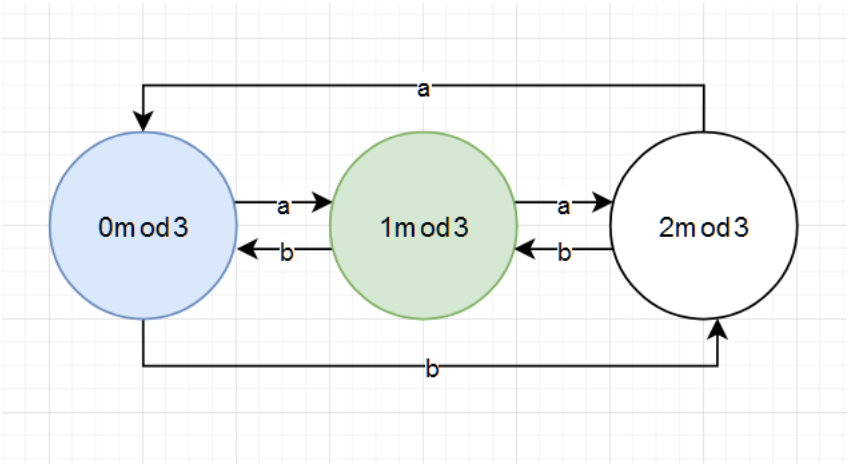

Figure 2: solution 2.b

c. $\Sigma = \{0, 1\}$ et $L = \{w \in \Sigma^* | w^r \equiv 2 (\text{mod} 5)\}$

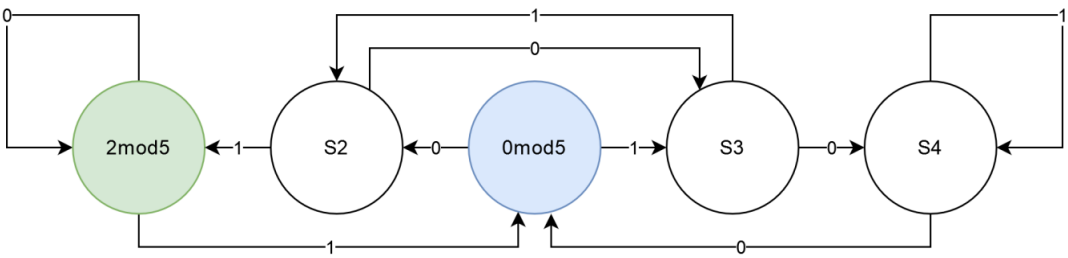

Figure 3: solution 2.c

Bleu: État initial
Vert: État acceptant