IGL502/752: devoir 4

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Question 1

Entrées : une expression booléenne t
Sorties : sommet u tel que $f_u = t$

```
build(t) :
    build'(t, i) :
        si t = faux alors
            retourner 0
        sinon si t = vrai alors
            retourner 1
        sinon
            v_0 ← build'(t[0/x_i], i + 1)
            v_1 ← build'(t[1/x_i], i + 1)
            retourner make(x_i, v_0, v_1)
    retourner build'(t, 1)
```

Question 2

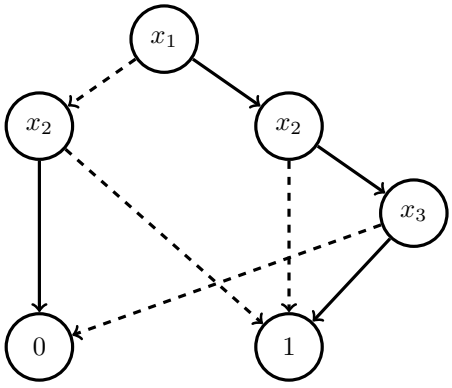
Question 3

(a) $x_1 \vee \neg x_2$

(b) $x_3 \oplus (x_4 \wedge x_5)$

Entrées : sommets u_1 et u_2
Sorties : sommet u qui représente $f_u = f_{u_1} \wedge f_{u_2}$

`apply`(u_1, u_2) *:*
  $v_1, \ell_1, h_1 \leftarrow var(u_1), lo(u_1), hi(u_1)$
  $v_2, \ell_2, h_2 \leftarrow var(u_2), lo(u_2), hi(u_2)$
  si $u_1 \in \{0,1\}$ *et* $u_2 \in \{0,1\}$ **alors**
    retourner $u_1 \wedge u_2$
  sinon si $v_1 < v_2$ **alors** `// Creuser à gauche`
    retourner `make(`v_1`, apply(`ℓ_1`, `u_2`), apply(`h_1`, `u_2`))`
  sinon si $v_1 > v_2$ **alors** `// Creuser à droite`
    retourner `make(`v_2`, apply(`u_1`, `ℓ_2`), apply(`u_1`, `h_2`))`
  sinon `// Creuser des deux côtés`
    retourner `make(`v_1`, apply(`ℓ_1`, `ℓ_2`), apply(`h_1`, `h_2`))`



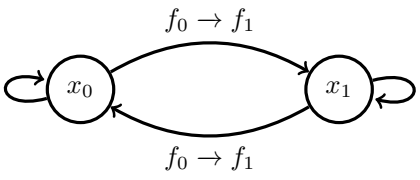
(c)

(d) ...

(e) ...

Question 4

$$\begin{array}{lcl} f_1 & \to & b_0 f_2 \\ f_2 & \to & \varepsilon \\ b_0 & \to & b_1 \\ b_1 & \to & \varepsilon \end{array}$$

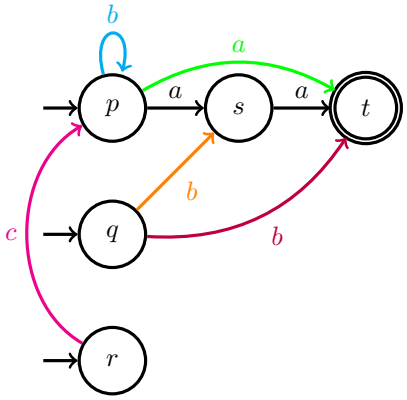


$$\begin{array}{lcl} f_1 & \to & f_0 f_2 \\ f_2 & \to & \varepsilon \\ b_0 & \to & f_0 b_1 \\ b_1 & \to & \varepsilon \end{array}$$

(a)

(b) ...

(c)



(d) ...