

```

def comp(x,y):
    if (x==y):
        print('A')
    elif (x<5) and (y>2):
        print('B')
    if x>2 or y>4:
        print('C')

```

① Input: (Int x Int.)

output: { 'A', 'B', 'C', 'AC', 'BC', nothing }

Note: nothing doesn't print a..r

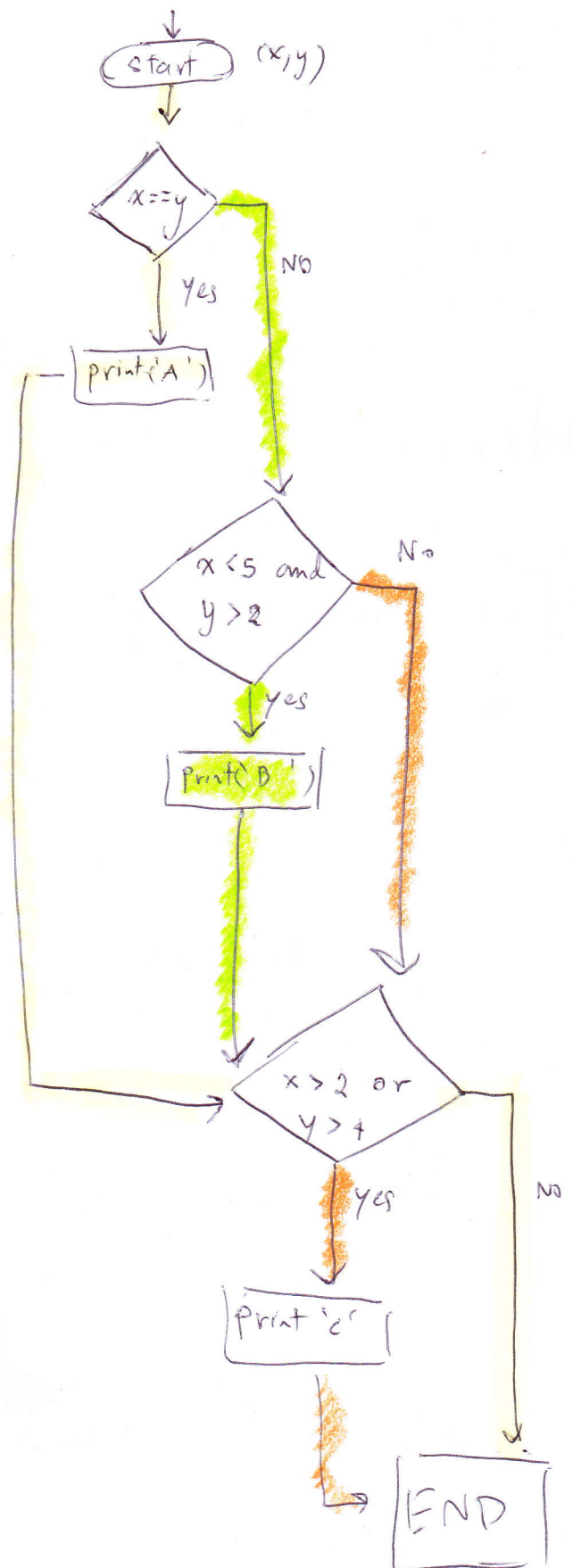
Input
② equivalence classes for

$$A = \{ (x,y) \mid x=y \text{ and } \text{not} (x>2 \text{ or } y>4) \}$$

$$= \{ (x,y) \mid (x=y) \text{ and } (x \leq 2) \text{ and } (y \leq 4) \}$$

$$= \{ (z,z) \mid z \leq 2 \}$$

#



$$B = \{ (x, y) \mid \text{not}(x=y) \text{ and } ((x < 5) \text{ and } (y > 2)) \text{ and Not}((x > 2) \text{ or } (y > 4)) \}$$

$$= \{ (x, y) \mid (x \neq y) \text{ and } ((x < 5) \text{ and } (y > 2)) \text{ and } (x \leq 2) \text{ and } (y \leq 4) \}$$

$$= \{ (x, y) \mid (x \neq y) \text{ and } (x \leq 2) \text{ and } (2 < y \leq 4) \}$$

$$= \{ (x, y) \mid x \in \{x \leq 2\}, y \in \{3, 4\} \text{ and } x \neq y \}$$

$$= \{ (2, 3), (2, 4), (1, 4), (1, 3), \dots \}$$

$$C = \{ (x, y) \mid \text{not}(x=y) \text{ and not } (x < 5 \text{ and } y > 2) \text{ and } ((x > 2) \text{ or } (y > 4)) \}$$

$$= \{ (x, y) \mid (x \neq y) \text{ and } ((x > 5 \text{ or } y \leq 2)) \text{ and } ((x > 2) \text{ or } (y > 4)) \}$$

Note:

$$(A \text{ or } B) \text{ and } (C \text{ or } D) = (A \text{ and } C) \text{ or } (A \text{ and } D) \text{ or } (B \text{ and } C) \text{ or } (B \text{ and } D)$$

$$= \{ (x, y) \mid x \neq y \text{ and } ((x > 5 \wedge (x > 2)) \vee (x > 5 \wedge y > 4) \vee (y \leq 2 \wedge x > 2) \vee (y \leq 2 \wedge y > 4)) \}$$

int,
 "C" = $\{ (x, y) \mid x \neq y \text{ and } ((x > 5) \vee (x > 2 \wedge y \leq 2)) \}$
 \times

Note: $((y \leq 2) \wedge (y > 4)) \neq \text{False}$.

②

$$\{ (x, y) \mid x > 5 \} \supseteq \{ (x, y) \mid (x > 5) \wedge y > 4 \}$$

"AC" = $\{ (x, y) \mid (x == y) \text{ and } ((x > 2) \text{ or } (y > 4)) \}$
 = $\{ (z, z) \mid z > 2 \}$
 \times

"BC" = $\{ (x, y) \mid \text{not}(x == y) \wedge ((x < 5) \wedge (y > 2)) \wedge ((x > 2) \vee (y > 4)) \}$
 = $\{ (x, y) \mid (x \neq y) \wedge ((x < 5 \wedge y > 2) \wedge x > 2) \vee ((x < 5) \wedge y > 2) \wedge y > 4 \}$
 = $\{ (x, y) \mid x \neq y \wedge (\underline{x > 2 \wedge x < 5} \wedge y > 2) \vee (x < 5 \wedge y > 4) \}$
 = $\{ (x, y) \mid x \neq y \wedge (\text{False} \wedge y > 2) \vee (x < 5 \wedge y > 4) \}$
 = $\{ (x, y) \mid x \neq y \wedge (x < 5 \wedge y > 4) \}$
 \times

$$\text{Nothing} = \{(x, y) \mid (x \neq y) \wedge ((x \geq 5) \vee (y \leq 2)) \wedge (x \leq 2 \wedge y \leq 4)\}$$

$$= \{(x, y) \mid (x \neq y) \wedge ((\underline{x \geq 5 \wedge x \leq 2} \wedge y \leq 4) \vee (x \leq 2 \wedge y \leq 2 \wedge y \leq 4))\}$$

$$= \{(x, y) \mid (x \neq y) \wedge ((\text{False} \wedge y \leq 4) \vee (x \leq 2 \wedge y \leq 2))\}$$

$$= \{(x, y) \mid (x \neq y) \wedge (\text{False} \vee (x \leq 2 \wedge y \leq 2))\}$$

$$= \{(x, y) \mid (x \neq y) \wedge (x \leq 2) \wedge (y \leq 2)\} \neq$$