CSci 365: Organizations of Programming Languages

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**Assignment 6 (chap. 8): 50 + 10 (optional) points**

Q1. [10] Rewrite the following code segment using a loop structure in the following languages.

Assume all variables and constants are floating point type.

k = (j + 13.0) / 27.0

loop:

if k > 10 then goto out

k = k + 1.2

i = 3 \* k - 1

goto loop

out: . . .

1. [5] C - using a **for** loop.

==============BEGIN ANSWER Q1.1==============

==============END ANSWER Q1.1==============

1. [5] Ruby - using a **while** loop
2. [5, optional] Python – use a proper loop structure

Q2. [10] Rewrite the following code segment using a multiple-selection statement in the following languages:

if ((k == 1) || (k == 2)) j = 2 \* k - 1

if ((k == 3) || (k == 5)) j = 3 \* k + 1

if (k == 4) j = 4 \* k - 1

if ((k == 6) || (k == 7) || (k == 8)) j = k – 2

1. [5] C
2. [5] Ruby
3. [5, optional] Python

Q3. [10] The following codes in C language. Rewrite these codes with *no* **goto**s and *no* **breaks**.

j = -3;

**for** (i = 0; i < 3; i++) {

**switch** (j + 2) {

**case** 3:

**case** 2: j--; **break**;

**case** 0: j += 2; **break**;

**default**: j = 0;

}

**if** (j > 0) **break**;

j = 3 - i

}

Q4. [10] The following codes find the first row of an *n* by *n* integer matrix named x that has nothing but zero values. Rewrite these codes *without* **goto**s in C language.

**for** (i = 1; i <= n; i++) {

**for** (j = 1; j <= n; j++)

**if** (x[i][j] != 0)

**goto** reject;

println ('First all-zero row is:', i);

**break**;

reject:

}

Q5. [10] Translate the following call to Scheme’s COND to C language and set the resulting value to y.

(COND

((> x 10) x)

((< x 5) (\* 2 x))

((= x 7) (+ x 10))

)

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