

(60-140) ASSIGNMENT 3

Due: 11:59pm, Nov. 3, 2017

1. **5.10** (p. 95) What output does the following program fragment produce? (Assume that `i` is an integer variable.)

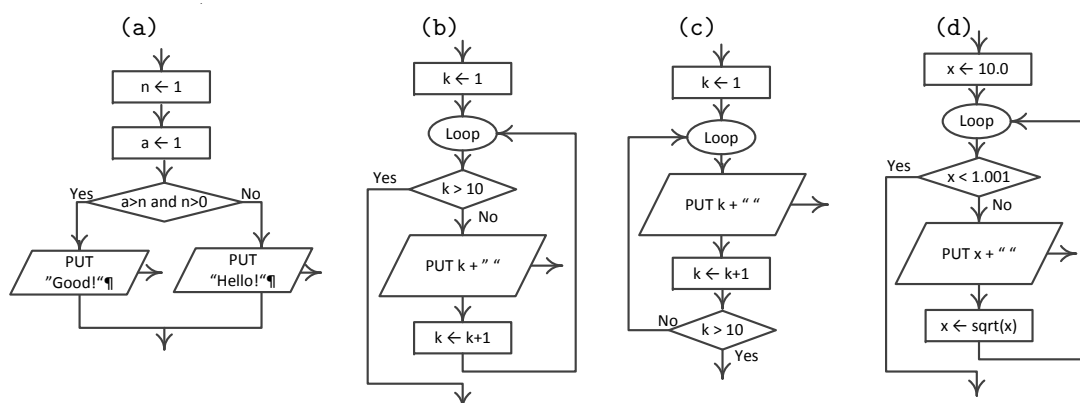
```
i = 1;
switch( i % 3 ) {
    case 0: printf("zero");
    case 1: printf("one");
    case 2: printf("two");
}
```

2. **6.6–7** (p. 121) Translate each of the following program fragment into a single `for` statement.

(a) `i = 1;`
`while (i <= 128) {`
 `printf("%d ", i);`
 `i *= 2;`
`}`

(b) `i = 9384;`
`do {`
 `printf("%d ", i);`
 `i /= 2;`
`} while (i > 0);`

3. **6.6–7*** (p. 121) For each of the program fragments in Question 2 before and after translation, what are the outputs?
4. What output does each of the following flowcharts produce? Write a program fragment in C for each of the flowcharts, and submit the codes online.



5. **6.5*** (p. 123) You have designed an algorithm with flowchart in A2.Q2 (Question 2 of Assignment 2) that allows the user to enter a two-digit number, and then prints the number with its digits reversed. Modify the flowchart so that the new algorithm is able to check the number, and prints the reversed digits if the number has more than two digits, which implies that the number of digits could be bigger than 3. The following shows three typical cases of running the software when the input number is negative, less than 10, or no less than 10.

case 1: Enter a number: -1
Invalid input!
Thank you for using the software.

case 2: Enter a number: 8
No need to reverse the number.
Thank you for using the software.

case 3: Enter a number: 12345
The reversal is: 54321
Thank you for using the software.

Save the flowchart in `a3_digits.rap`, and submit the file as your solution to this question.

Hint: Use a `do` loop that repeatedly divides the number by 10, stopping when it reaches 0.

6. **6.5** (p. 123) Implement the algorithm to produce a C program that accomplishes what `a3_digits.rap` does. Save the program in `a3_digits.c`, and submit this file as your solution to this question.