

## Problem Set 4 Exercise #02: NRIC Check Code

**Reference:** Lecture 10 notes

**Learning objective:** Characters

**Estimated completion time:** 30 minutes

### Problem statement:

Write a program **ic\_check\_code.c** to read a 7-digit positive integer representing a NRIC number and generate its check code.

The algorithm for generating NRIC check code is illustrated with the following example of NRIC number **8730215**.

Step 1: Multiply the digits with their corresponding weights **2, 7, 6, 5, 4, 3, 2** and add the products. Example:  $8 \times 2 + 7 \times 7 + 3 \times 6 + 0 \times 5 + 2 \times 4 + 1 \times 3 + 5 \times 2 = 104$

Step 2: Divide step 1 result by **11** to obtain the remainder. Example:  $104 \% 11 = 5$

Step 3: Subtract step 2 result from **11**. Example:  $11 - 5 = 6$

Step 4: Match step 3 result in this table below for the check code.

|               |   |   |   |   |   |   |   |   |   |    |    |
|---------------|---|---|---|---|---|---|---|---|---|----|----|
| Step 3 result | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Check code    | A | B | C | D | E | F | G | H | I | Z  | J  |

Example: The check code corresponding to 6 is 'F'.

Your program should include a function

```
char generate_code(int num)
```

that takes in an integer (the NRIC number) as parameter and returns a character (the check code of that NRIC number).

A tip is given at the end of next page.

### Sample run #1:

```
Enter 7-digit NRIC number: 8730215  
Check code is F
```

### Sample run #2:

```
Enter 7-digit NRIC number: 1234567  
Check code is D
```

**Sample run #3:**

Check against your own IC and report any discrepancy to the ICA.

**Use tips:**

This exercise can be done without using array/string, but will result in a long-winded program. Can you make use of array/string to shorten your code?