CS1010E Programming Methodology
Tutorial 9: Characters and Strings

Man's mind, once stretched by a new idea, never regains its original dimensions.
~ Oliver Wendell Holmes

To students:

Please be reminded that our **Practical Exam 2** is on this **Saturday.** Please check IVLE for seating plan, etc.

I. Manual tracing

1. For each of the program fragments below, write down its output.

    (a) [CS1010 AY2013/14 Semester 1 Exam, Q1.1]

    ```
    int a = 9;
    if (isdigit(a)) {
      printf("true\n");
    } else {
      printf("false\n");
    }
    ```

    (b) [CS1010 AY2012/13 Semester 1 Exam, Q1.1]

    ```
    char s1[7] = "ace", s2[] = "bdf";
    strcat(s1, s2);
    printf("%s\n", s1);
    ```

    (c) [CS1010 AY2011/12 Semester 1 Exam, Q1.2]

    ```
    char c = 'b', d = 'H';
    int a = d - toupper(c);
    printf("%c %d\n", c, a);
    ```

    (d) [CS1010e AY2010/11 Semester 2 Exam, Q9]

    ```
    char arr[10] = {'A', 'B', '\0', 'D', 'E',
                    'F', '\0', 'H', 'I', '\0'};
    printf("%s\n", arr);
    ```

2. [CS1010 AY2010/2011 Semester 1 Exam, Q2b]

   Write down the output of the following program.

```
#include <stdio.h>

int functionXYZ(char *str, char ch);

int main(void) {

  char s[] = "abbacadaba";
  printf("%d\n", functionXYZ(s, 'b'));

  return 0;
}

int functionXYZ(char *str, char ch) {

  int i = 0, j = 0;
  while (str[i]) {
    if (str[i] == ch) {
      j++;
    }
    i++;
  }

  return j;
}
```

3. Study the following program.

   (a) Assuming that a user name can contain up to 8 characters, student Brusco wrote this:

```
char username[8];
 . . .
scanf("%s", username);
```

   What is wrong with Brusco's code?

   (b) What is wrong if Brusco writes the following code?

```
char fruitname[8];
 . . .
strcpy(fruitname, "pineapple");
printf("%s\n", fruitname);
```

II. Programming

4. **[Problem Set 4 Exercise #03] Greetings**

5. **[Problem Set 4 Exercise #06] Word Game**

6. **[Problem Set 4 Exercise #07] My String Functions**