3.

a. Write a function, **extractIntStr**, which accepts two C-Strings, **s** and **intStr** as parameters and copies the characters of an integer value embedded in **s** to **intStr**. For example, if **s** is **"agent#007codeX"** the function should copy **'0'**, **'0'**, and **'7'** to **intStr**. The use of other functions is NOT allowed. [5 marks]

b. Write a function, **intToString**, with the following prototype:

```
void intToString (int n, char s[]);
```

which accepts an integer value **n** and a C-string **s** as parameters and stores **n** as a sequence of characters in **s**.
For example,
If `n = 0,` **s** should contain `'0'`
If `n = 90,` **s** should contain `'9', '0'`
If `n = 125,` **s** should contain `'1', '2', '5'`
You can assume a length () function exists which takes a C-String and returns the length of the C-String. (Note that **intToString** is opposite to the string to integer done in class.) [8 marks]

c. The ***ShiftY*** algorithm can be used to encrypt a C-string (character array terminated with the null character) before it is transmitted over the Internet. The ***ShiftY*** algorithm works as follows:

- Each letter in the message is converted to the letter that is *Y* positions to the right of that letter in the English alphabet. The case of the letters must be maintained.
  For example:
  Using Shift4 (Y is 4):
  'a' → 'e', 'B' → 'F', 'w' → 'a' and 'Z' → 'D'

  Using Shift5 (Y is 5):
  'a' →'f', 'B' → 'G', 'w' → 'b' and 'Z' → 'E'

- Non-letters are left as they are.

Write a function **encrypt** which encrypts a letter of the alphabet, given the value of Y which is supplied as a parameter. The function should return the encrypted letter. The function header of **encrypt** is as follows:

```
char encrypt (char ch, int y);
```

e.g., **encrypt('a',4)** should return **'e'** and encrypt **('B',5)** should return **'G'**.
[5 marks]

Q3 Total Marks: 18

END OF EXAM