Data Files

8.1 Objectives

1. To familiarize the input/output using through data files and functions.

   Time-span: 1 lab days (2 hrs.)

8.2 Problems

1. The C language treats file buffer and I/O buffers in a similar manner. Input and output buffers are pointed by the global FILE * type variables **stdin** and **stdout** defined in the header "stdio.h". This means, we can do console input/output using the same functions that we use for file input/output. Verify this claim by writing a program to add two numbers, using the functions **fscanf** and **fprintf** for console input/output.

2. This problem describes encryption and decryption. Encryption is the process of converting a message in a form such that unwanted people cannot easily understand the message. The message converted in such a form is called an encrypted message. The process of converting and an encrypted message into the original form is called decryption. Encryption/Decryption were used in warfare for sending secret messages. Nowadays, there are several applications of encryption or decryption in area related to secured information storage and flow. There are several methods of encrypting messages. A simple strategy for encrypting a text message is as following.

   (a) Replace each alphabetic character, except `z' or `Z', by the next character in the alphabet. For example, `a' is replaced by `b', `b' is replaced by `c', and so on. But replace `z' by `a'.
   (b) Leave the remaining characters as they are.

   For example, consider the following text message.
   Nepal is a mountainous country. Mount. Sagarmatha is 8848 meters high. I love my country.

   The encryption scheme converts this text into the following form.
   Ofqbm jt b npvoubjopvt dpvousz. Npvou. Tbhbsnbuib jt 8848 nfufstijhi. J mpwf nz dpvousz.

   Write programs for the following purposes.
   (a) **Encrypt** the message in a given text file and save it into another text file.
   (b) **Decrypt** the message in a given text file and save it into another text file.

3. This problem asks you to build a telephone directory application. You should do the file input/output using the **block** input/output functions **fread** and **fwrite**.
   (a) Write a function to save names and phone numbers of people to a data file.
   (b) Write a function that opens the file created by the program of question in section (a) and finds the phone number or name of a person given his/her either name or number.
   (c) Write function that allows the user to append new data in the file created in question (a).

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