CS F363 Compiler Construction
Assignment-1 (Question-3)

Due date: 9 March 2023 11:59 PM **Marks : 5**

You are given some data in the form of a text file (namely, *data.txt*). The data is a collection of records. Each record starts with a $ followed by the customer id (*custId*) followed by a sequence of one or more transactions; each transaction contains the date in DD/MM format and the value of the transaction, and ends with a semicolon (;). The general format of a record is

$$\$\ custId\ DD/MM\ val;\ DD/MM\ val;\ \ldots;\ DD/MM\ val;$$

where

1. *custId* is an alphanumeric string contains only upper case letters and digits 0 to 9; starts with upper case alphabets followed by at least one digit from $0, 1, \ldots, 9$. Ex. $ABC12, X123, PQR13, \ldots$, etc.
2. DD can be $01, 02, \ldots, 30$ and MM can be $01, 02, \ldots, 12$.
3. *val* is a non-negative integer that may also start with 0 i.e., 015, 0023, 000, are considered as integers.

Please note the following:

1. A record starts with $ and is completely contained in the same line. Hence, the information before the $ symbol in a line is not a part of any record. You can ignore such information.

   For example: 04/12 8500 $$AB12\ 10/10\ 1000;\ 02/10\ 400;$$

   In the above exampe “04/12 8500" is not part of any record.
2. Further, a line can contain more than one record.
   For example: $$\$AB12\ 10/10\ 1000;\ 02/10\ 400;\ \$\ BCD123\ 04/12\ 45000;$$ contains two records.
3. If a record is missing *custId* (after $) (call the record as invalid record), then just ignore the record.

   For example: $ 10/10 1000; 02/10 400; is missing the *cust_id* so ignore the record.
4. *data.txt* may contain some comments that start with //, just igonre the entire line.
5. You can assume that all the valid records are in the general form mentioned above.

Write a LEX program that takes a date in the DD/MM format and outputs the following:

1. The number of valid transactions on the given date and
2. the *custId* of the customer with maximum transaction value on the given date.

General Instructions:

1. It is a **group assignment** and maximum size of a group is **two**.
2. Submit a single LEX (.l) file and one submission per group is sufficient.
3. Please enter the details of your group in `https://forms.gle/wBNsbf5iQzKZtK8L9`
4. Strictly follow the input and output formats mentioned below.

5. Due date is 9 March 2023 11:59 PM and request for the extension of the due date will not be considered.
6. **Late submission:** Each 1 hr delay fetch 2% penalty and late submission will not be accepted after 24 hours from the due date.
7. Your program must be compiled on Ubuntu 22.04 by following the squence of commands:
    - $lex filename.l
    - $gcc lex.yy.c -ll
    - $./a.out

Input format: Two text files will be given as part of the input:

1. *data.txt*; the details about the file is given above.
2. *input.txt* contains a single line with an instance of DD/MM.

Output format: Generate a file, *output. txt* (do not use other names) with the output of the problem in the format $\$k\$custId\#$ where k is the number of transactions on the given date and $custId$ is the total value of the transactions on the given date.