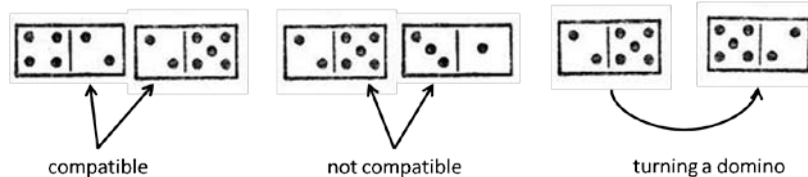
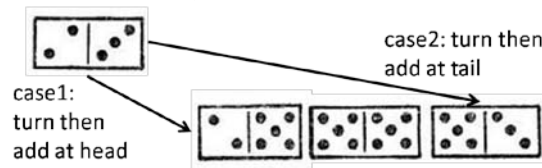


Exercise I (30 points): Dominoes Game

A domino is a rectangular tile with a line dividing its face into two square ends. Each end is marked with a number of spots (from 0 to 6 spots). A dominoes game is a linear linked list of dominoes. One can add a domino at any of the two ends of the list, the head, or the tail, but not at the middle. Two consecutive dominoes in a game must be compatible; this means that they must have the same number of spots in their tangent ends. A domino can be turned.



1. Define the data types "Domino" and "Game".
2. Write the function "turn" that turns a domino.
3. Write the function "add" that adds a given domino to a given game. When both domino ends are compatible with the game, the smaller one must be used. In the example below, the case1 must be retained. The function can take the tail of the list as an additional parameter, in order to minimize the processing complexity. The function must return a boolean to indicate whether the adding was successful.



4. Write the function "load" that opens a binary file "game1", and constructs a game. The file holds a series of "domino" pieces that must be added to the game by the order of their appearance in the file (if the adding is possible). The function must return the sum of dots of the pieces that could not be added to the game.

Exercise II (23 points): DBMS

Consider two text files with the following description; the first file "reg.txt", contains the student ids along with their names, the second file "exam.txt" contains the student ids along with their grades. The files are not sorted. Students registered in the first file, are not necessarily all present in the second file.

5. Write the function "result" that creates and fills the file "results.txt", with the name and grades of students who passed the exam, sorted by name. Before you write the function, explain in few lines the steps of your procedure.

| reg.txt | exam.txt | results.txt |
|------------|----------|-------------|
| 70123 sisi | 52666 70 | lili 70 |
| 67231 fifi | 67231 23 | mimi 66 |
| 71222 kiki | 70123 90 | sisi 90 |
| 65343 mimi | 66001 33 | |
| 66001 riri | 65343 66 | |
| 52666 lili | | |

The End