

10 marks for coding style (variable names, indentation, modularity, comments, error handling etc)

You are given a menu and a calorie chart for a sequence of  $n$  days (see example below). For each day, you have to decide whether you want to go for unhealthy high calorie (but tasty :- ) food, healthy low calorie food, or fasting. To maintain good health, you should choose the high calorie menu only if you have taken the fasting option the previous day.

Example:

Day No.	Fasting	Low Calorie food	High Calorie food
1	10	250	2000
2	12	243	4500
.			
.			
n	19	398	2498

Write programs that gives you a food schedule that maximizes your calories (and therefore the fun) in the following ways.

1. Using bottom up tabular approach of dynamic programming. (20 marks)
2. Using the top down recursive approach **with** and **without memoization**. (15+15 marks)
3. Run experiments that compare the running time of the three approaches with the same inputs. (10 marks)

10 **bonus** marks for the simplifying modification: you can choose high calorie diet only if either you have fasted or had low calorie diet the previous day. You can use any one of the above methods for implementing this.