

Currency exchange

You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.

Assignment statement

You are given a table of currency exchange rates between currencies X_1, X_2, \dots, X_n . Such a table sometimes creates an opportunity for making easy money when starting with some amount of X_i and converting it back to X_i through some sequence of conversions, yields more than the starting amount.

You are required to write a program that takes such a table and detects whether such an opportunity exists.

Entry $\langle X_i, X_j \rangle$ is the units of X_j given for 100 units of X_i

100	X_1	X_2	X_3
X_1	100.00	200.00	400.00
X_2	50.00	100.00	220.00
X_3	25.00	45.00	100.00

A sample currency conversion table

According to this table, conversion from X_1 to X_2 and then from X_2 to X_3 and then back to X_1 is profitable, leading to a gain of 10 units of X_1 .

Inputs and testing

Your program should read a conversion table for 30 currencies; it should then report whether the conversion table presents an opportunity of making a profit through cyclic conversions.

In your report you should describe the solution to the problem. You have to first state this problem maps to which well known algorithm. You have to implement the algorithm in the most efficient manner possible. You have to give the analysis of the final running times in the report.

Marking guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions get blocked after the assignment is marked.

Working of program	20
Report describing solution procedure	10
<i>Total Marks</i>	<i>30</i>

Assignment submission

Use electronic submission via the [WBCM link](#)

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires.

Warning

Cases of copying will be dealt with seriously and severely, with recommendation to the Dean to de-register the student from the course.