PROGRAMMING EXERCISE

TASK

The exercise is to implement an algorithm that can generate a list of 96 words.
Every word should be created using six (6) characters in total, all of which are to be picked from a four-letter alphabet consisting of A, C, G and T.
Each word in the list must differ from every other word in the list in at least three positions.

EXAMPLE RESULT

To explain the task with an example, please find below a possible solution for a similar problem with slightly different requirements. Here, only 12 [instead of 96] words were required, each consisting of only 4 [instead of 6] characters. The table is a distance-matrix holding the number of differences for each pair of the 12 words (repeated in rows and columns):

	AAGG	ACAC	ATCT	CAAT	CGCG	CTGA	GACC	GCGT	GGAA	GTTG	TCTA	TGGC
AAGG	–	3	3	3	3	3	3	3	4	3	4	3
ACAC	3	–	3	3	4	4	3	3	3	4	3	3
ATCT	3	3	–	3	3	3	3	3	4	3	4	4
CAAT	3	3	3	–	3	3	3	3	3	4	4	4
CGCG	3	4	3	3	–	3	3	4	3	3	4	3
CTGA	3	4	3	3	3	–	4	3	3	3	3	3
GACC	3	3	3	3	3	4	–	3	3	3	4	3
GCGT	3	3	3	3	4	3	3	–	3	3	3	3
GGAA	4	3	4	3	3	3	3	3	–	3	3	3
GTTG	3	4	3	4	3	3	3	3	3	–	3	4
TCTA	4	3	4	4	4	3	4	3	3	3	–	3
TGGC	3	3	4	4	3	3	3	3	3	4	3	–

IMPLEMENTATION

You can use any programming language (preferable matching the requirements given in the job description, if specified) to fulfill the task.

Please do not use external libraries to provide central functionalities of your solution. Very common standard includes are acceptable. The main goal is to generate the list of words. The distance matrix shown for the example result is optional.

DELIVERABLES

Please provide the source code of your solution together with instructions on how to run the program. In addition, please also provide one example solution (list of 96 words) that has been generated running the developed code.