Bizzflo Screening Test

**Q1**. Give a matrix (2D Array) X of size n rows and m columns, write a function named get AB() in Python using only basic Python code to compute matrices(2D arrays) A and B such that X= A.B and A has k columns and B has k rows. The function inputs X and k, and outputs A and B.  In case, it is not possible to compute A and B such that A.B=X, compute the best fit for A and B.  
  
\*Note:   
1. Do NOT use any other libraries except the basic Python inbuilt functions and data structures. We would like to see your code to compute A and B given X and k from scratch. You are NOT allowed to use NumPy, SciPy or any other numerical algebra or ML or Deep Learning library.  
2. Do not use/copy code from any website like GitHub or Stack Overflow. Implement it on your own. Do not collaborate with others on this task.  
3. Write clear comments to explain each section of your code.  
4. We will pass your code through various test cases and determine its degree of correctness.   
5. Attach the .py file with a function named get AB(X,k, A,B) in it. It should input X and k and output a valid A and B.  
  
**Q2.** Explain in detail (no code needed) how you would solve the previous question if the size of X is very large and X is a sparse matrix  
  
**Q3.** How can you speed up your implementation in Question-1 by an order of magnitude? Write your suggestions in detail. No code needed.

**Answer: Q2.** Explain in detail (no code needed) how you would solve the previous question if the size of X is very large and X is a sparse matrix

Sparse matrix is the matrix where the most of the values are zeros.  
I will change the matrix as where the number is present enter that value. Instead of go from all the value only took the those values where the value is non zero.

**Q3.** How can you speed up your implementation in Question-1 by an order of magnitude? Write your suggestions in detail. No code needed.

I solve this problem with I used gradient descent technic. To solve this problem I will be used different optimization techniques which give good result. I change the learning rate and check with different values. There are different techniques available to like XGBoost, Adam optimizer to solve this problem with efficient way.