Computing the dot product of two vectors

In this project, we aim to implement and compare two programs that compute the dot product of two vectors. One program will be implemented in C or C++, and the other in Java. The data type of the vectors can be int, float, double, or others.

Requirements

1. Implement a program in C or C++ and another in Java to compute the dot product of two vectors.
2. Measure the time of the computation. As the length of the vectors increases, the time should increase too.
3. Compare the performance of the two programs and explain the reason for any observed differences.
4. Perform additional comparisons and analysis to identify any interesting insights.

Tips:

1. As efficiency is the primary focus, random values can be used to generate vectors.
2. There is no need to customize a data type of arbitrary precision.
3. A long vector/array can be generated using `float * vec1 = (float*)malloc(n * sizeof(float));`.

Rules:

1. The project report and the source code must be submitted before the deadline. Any submission after the deadline (even by 1 second) will result in **a score of 0**. The deadline is 23:59 on March 26.
2. The files should be submitted as report.pdf, xxx.c, and Xxx.Java. The files should **NOT** be compressed into one.
3. The score will depend on the quality of both the source code and the report. The report should be easy to understand and provide a clear description of the project, especially the highlights.
4. Attention should be paid to code style. Adequate time is given for code to be written correctly and with good style. Deductions will be made for poor code style. Code style guides, such as the Google C++ Style Guide (http://google.github.io/styleguide/cppguide.html), can be used as a reference.