Term Project

General Rules for the Project

Teams:

You are to work in teams of two. Ideally, each team will consist of a biology major and a computer science major. All computer science majors are required to write a computer program in a computer language of their choice. Each member of the team is expected to participate equally in the project and will receive the same grade on the project.

Project Requirements:

Each team will choose a project listed in this document. Alternatively, the team can propose their own project based on their own research interests, with the approval from the instructor.

Your final project grade will be computed in the following way:
a) Team Formation: 10% b) Progress Report: 20% c) Project report: 70%

Important Dates:

a) Team Formation

Thursday, September 26: Each team submits a paper containing the names of the team members and the chosen topic. If the topic is not the one described under "Project Topics" below, then the team includes a detailed description of their proposed project.

b) Progress Report

Thursday, October 24: Two-page progress report by each team is due at the beginning of the lecture. Include the title of the project, description of the problem in your own words, tools that you have used so far in the analysis, the programming language used (for Computer Science majors), the description of the data sets, and references. Alternatively, hand-in all the work done so far.

c) Project Report

Tuesday, December 3: Printed copies of the final project are due at the beginning of the lecture. Do not forget to include all pertinent documents. Also, submit a CD (or USB flash drive) containing all the files described in Section B under "Submission Requirements" below.

I) Programming Project (for Computer Science Majors)

Submission Requirements:

Please include references for any material you have used, including source code.

A) Submit a hard copy of the project containing all of the following:

1) Title page.
2) Table of contents (with page numbers).
3) An essay of not more than 6, 1 and 1/2 spaced pages (font size: 11 or 12 points) describing the problem, the overall organization, design of your program. The essay should include a detailed analysis of your results and comparison with the findings presented in the chapter (or original article). Use MS Excel or a similar package to generate tables and graphs. The essay should give the user an overall roadmap of your code, and would be read by a maintenance programmer before he/she began reading your code. Please do not include definitions, explanations of topics we have covered in the course and do not simply copy the original article. Include a flowchart, or UML or a structure chart to show the design of your program. Do not forget to number pages!
4) A one-page description of the test data including accession numbers. You must test your program with the data sets described in the articles or downloaded from databanks such as GenBank at NCBI. You may use additional data sets if you wish.
5) Include one sample output of your program. Make sure that your output is readable and well formatted.
6) Instructions for running your program, in other words, explain how to compile, and execute your program.
7) A list of references.

B) Submit a CD, or USB flash drive, labeled with your names, course number and semester, and containing:

a) The source code (fully documented)
b) The input files
c) The document specified in part A

Please make sure that all the files on the CD (or USB key) are readable.

Project Topics:

Each group is required to choose a chapter from the textbook [ZB08] from Chapters 6 to 17, read the chapter (or most of it), and:

a) Perform some of the bioinformatics analyses described in the chapter you choose.
b) Choose an algorithm, implement, run, and test it. If possible, compare its performance to a publically available package.

[ZB08] “Understanding Bioinformatics”, by Marketa Zvelebil and Jeremy Baum, Garland Science, 2008.

II) Non-Programming Project (for Biology and non-CS Majors)

Submission Requirements:

Please include references for any material you have used.

A) Submit a hard copy of the project containing all of the following:

1) The cover page with the appropriate fields filled in by you.
2) Table of contents (with page numbers).
3) A 10-page summary of the topics you chose from the chapter, including the results of the bioinformatics analyses. Use single space and 12pt font. Please do not include definitions, explanations of topics we have covered in the course and do not simply copy the original articles. Use MS Excel or a similar package to generate tables and graphs. Include screen dumps were appropriate. Do not forget to number pages!
4) A copy of your PowerPoint presentation, 6 slides per page. The PowerPoint presentation should be on the topics you have decided to concentrate on.
5) A copy of the Hands-On exercise you have prepared. The Hands-On exercise should be on the topics you have decided to concentrate on.
6) A list of references.

B) Submit a CD, or USB flash drive, labeled with your names, course number and semester, and containing:

a) An MS Word document containing the summary mentioned under 3) above.
b) The PowerPoint presentation you have prepared.
c) The Hands-On exercise you have prepared.
d) Additional articles (in pdf) used in your project.

Please make sure that all the files on the CD (or USB key) are readable.

Project Topics:

Each group is required to choose a chapter from the textbook [ZB08] from Chapters 6 to 17, read the chapter (or most of it), and:

a) Perform some of the bioinformatics analyses described in the chapter you choose.
b) Prepare a hands-on exercise on the material you covered in part a).
c) Prepare a PowerPoint presentation (of at least 20 slides) on part a).

[ZB08] “Understanding Bioinformatics”, by Marketa Zvelebil and Jeremy Baum, Garland Science, 2008.