Due Date: June 24, 11:59pm, on Blackboard

We have studied various algorithms in the class so far. In this assignment, you will choose a favorite algorithm and do some in-depth learning. The algorithm can be any one that we have learned in the textbook or in the class, or can be the ones in the homework. I also encourage you to study Hash table and Red-Black Tree even if we have not finished learning them. ***The goal of this assignment is for you to research the applications of this algorithm.*** You will need to read scholarly academic papers (e.g., published on IEEE and/or ACM). Online references may additionally be cited, but you must include citations to at least three published articles.

Then you are going to write a report to summarize your findings. In your report, cite the papers you read as follows: you must list all the sources you use in the Reference section. The list of citations is arranged alphabetically by first author's last name and numbered sequentially. In the main text, sources are referred to by number in square brackets. (This is known as IEEE format.)

In the report, please include at least the sections shown in the sample report below, namely: **Introduction**, **Applications**, **Conclusions**, and **References**. Deductions will apply if any of these sections are missing.

Unlike other assignments, this homework needs to be submitted electronically as well as a paper copy in the class. All submitted reports would be checked for plagiarism using Turnitin.com. Do not submit a report with unattributed quotations or unattributed summarizations of others' work.

ACKNOWLEDGMENT
With permission, material for this assignment, including the writing excerpt in the example report, was borrowed and adapted from Prof. Fred Martin's web page, http://www.cs.uml.edu/ecg/index.php/HowToCite. Please see that URL for additional guidance.

Grading Rubrics

Name: _____ ID: _____

Feature	Value	Comments
Summary of algorithm	20	Clear presentation of how the selected algorithm works, e.g., • writing is clear and correct (20 pts); • writing is mostly clear (16 pts); • writing has some errors (12 pts); • writing is not coherent (0 pt)
Discussion of lit references	50	Clear presentation of how algorithm connects to real-world applications, at least 2 applications needed, e.g., • writing is clear and correct (50 pts); • writing is mostly clear (40 pts); • writing has some errors (30 pts); • writing has errors and somewhat coherenet (20 pts) • writing is not coherent (10 pts)
Literature references	20	References has full & correct citations, e.g., • three citations (20 pts) • two citations (13 pts) • one citation (7 pts); • no citation (0 pts)
All sections of paper exist	10	Contains sections: Introduction, Applications, Conclusions, and References, as required
Total	**100**	

Your Report Title

Your name

INTRODUCTION

This section provides background information for your algorithm. For example, you will describe the detailed information about the algorithm, including how it works, the pseudo code, the analysis of the running time. If there is data structure involved, please also introduce the data structure and its use. Use diagrams or figures to help your explanation if needed. You may also discuss the general use of the algorithm. This is the section to summarize what you have learned in the class.

APPLICATIONS

This section introduces the real-world applications of the algorithm you selected. *Discuss at least two applications.* Explain why the algorithm was chosen to solve a certain problem and the benefits of using it. You may also discuss the performances under various situations and the limitation if there is any.

While you write, please cite the papers you read appropriately. All facts, algorithms, tables, or figures taken from the paper should be listed at the end of the document in a section titled "REFERENCE."

Here is an example of a passage that properly cites others' ideas:

> There is much evidence that there is a need for greater high-tech skills in today's workforce (e.g., [4]). There is substantial under-representation by women and ethnic minorities in technical fields, including computer science [2]. This is a matter of social justice and international competitiveness [3]. Addressing this, since 1999 NSF has spearheaded a series of funding programs to "broaden participation in computing" and other STEM fields [1]. Most recently, the White House announced Computer Science For All, which strives to "empower a generation of American students with the computer science skills they need to thrive in a digital economy" [5].

Notice that each statement/idea is attributed to the respective author(s). Sometimes their point is summarized, and other times it's presented verbatim with quotes. But in both cases, the paragraph builds its argument based on the work of others. Then, in the bibliography, the full reference for each cited work is given (please refer to the REFERENCES section).

Diagrams

In papers submitted for publication, you cannot reproduce diagrams from others' work **unless you have explicit permission from the publication journal** or if you can pass the four-factor test for fair use. If you ask for permission, there is often a fee that must be paid to license such use.

In papers submitted in this class, it is allowable to include diagrams borrowed from others work, given the following is satisfied:

1. You must provide that a full citation to the source of the diagram in your References section
2. Include verbatim statement, next to the diagram, ***"From <insert author(s) name and publication year>. Reproduced without permission."***

Alternatively, you may redraw diagrams you found elsewhere provided that you give credit. In this case (for a redrawn image), you would (1) provide the full citation in your References section, and then (2) next to the drawing, include the verbatim statement ***"Adapted from <insert author(s) name and publication year>."***

CONCLUSION

This section summarizes the algorithm and your findings in the report. You may discuss future work if you are interested in exploring the research area further.

REFERENCES

[1] Aspray, W. (2016). Opening Computing Careers to Underrepresented Groups. In *Participation in Computing* (pp. 13-52). Springer International Publishing.
[2] Jackson, D. L., Starobin, S. S., & Laanan, F. S. (2013). The shared experiences: Facilitating successful transfer of women and underrepresented minorities in STEM fields. *New Directions for Higher Education*, 2013(162), 69-76.
[3] Leggon, C., McNeely, C. L., & Yoon, J. (2015). Advancing Women in Science: Policies for Progress. In *Advancing Women in Science* (pp. 307-340). Springer International Publishing.
[4] Olson, S., & Riordan, D. G. (2012). Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics. Report to the President. *Executive Office of the President.*
[5] Smith, M. (2016). Computer Science For All. https://obamawhitehouse.archives.gov/blog/2016/01/30/computer-science-all. Accessed December 9, 2018.

Algorithms -- COMP.4040 Honor Statement
(Courtesy of Prof. Tom Costello and Karen Daniels with modifications)

Must be attached to each submission, otherwise, your homework will not be graded.

Academic achievement is ordinarily evaluated on the basis of work that a student produces independently. Infringement of this Code of Honor entails penalties ranging from reprimand to suspension, dismissal or expulsion from the University.

Your name on any exercise is regarded as assurance and certification that what you are submitting for that exercise is the result of your own thoughts and study. Where collaboration is authorized, you should state very clearly which parts of any assignment were performed with collaboration and name your collaborators.

In writing examinations and quizzes, you are expected and required to respond entirely on the basis of your own memory and capacity, without any assistance whatsoever except such as what is specifically authorized by the instructor.

I certify that the work submitted with this assignment is mine and was generated in a manner consistent with this document, the course academic policy on the course website on Blackboard, and the UMass Lowell academic code.

Date: _____

Name (please print): _____

Signature: _____