

Assignment 4

Due: 11:59pm Nov. 17 (Tue.)

This assignment is done individually or by a group of 2 students. Each group submits only 1 copy of the assignment.

README – 2 points

Input/output format (including the function name and the number of arguments) – 3 points

1. **[15 points]** Write a Haskell program **replace x y lt** that replaces all occurrences of x in list lt with y.
E.g. `replace 2 5 [1,2,4,2,3] = [1,5,4,5,3]` //replace all occurrences of 2 with 5.

2. **[20 points]** Write a Haskell function **delete k lt** that removes **every kth** element of a list lt.
E.g. `> delete 2 [3,4,5,6,7,8,9]` //remove the 2nd, 4th, and the 6th element
[3,5,7,9]

3. **[20 points]** Write a Haskell function **maxodd lt** that computes the maximum element occurring at odd positions of list lt (**Assume that the list lt contains at least one element**).
E.g. `> maxodd [3,1,6,8,2,3] = 6` //the maximum element appearing in the odd position of the list is 6

4. **[20 points]** Write a Haskell function **union lt1 lt2** that returns the union of two lists lt1 and lt2. **The resulting list does not contain duplicate elements.**

E.g. `union [1,2,2,3] [1,1,2,5] = [3,1,2,5]` (or `[1,2,3,5]` or `[1,2,5,3]`,) // the order of elements does not matter

5. **[20 points]** Write a Haskell function **flatten lt**, which transforms a list lt of lists of integers into a “flat” list by replacing each sublist in lt with its elements.
E.g. `> flatten [[1,2],[2,3]]`
[1,2,2,3]

Instruction of Submission:

- Write a program **assignment4.hs** which contains the implementation of all functions.
- Write a **README** file (text file, do not submit a .doc file) which contains
 - Your (or your group members) name and email address.
 - Whether your code was tested on remote.cs.binghamton.edu.
 - (Optional) Briefly describe anything special about your submission that the TA should take note of.
- Place assignment4.hs and README under one directory with a unique name (such as [userid]_4 for assignment 1, e.g. pyang_4).
- Tar the contents of this directory using the following command.
tar -cvf [directory_name].tar [directory_name]
E.g. `tar -cvf pyang_4.tar pyang_4/`
- Upload the tared file you created above on the blackboard.

Academic Honesty:

All students should follow [Student Academic Honesty Code \(http://watson.binghamton.edu/acadhonor-code.html\)](http://watson.binghamton.edu/acadhonor-code.html). All forms of cheating will be treated with utmost seriousness. You may discuss the problems with other students, however, you must write your OWN codes and solutions. Discussing solutions to the problem is NOT acceptable. Copying an assignment from another student or allowing another student to copy your work may lead to an automatic F for this course. If you borrow small parts of code/text from Internet, you must acknowledge this in your submission. Also, you must clearly understand and be able to explain the material. Copying entire material or large parts of such material from the Internet will be considered academic dishonesty. Moss will be used to detect plagiarism in programming assignments. You need ensure that your code and documentation are protected and not accessible to other students. Use **chmod 700** command to change the permissions of your working directories before you start working on the assignments. If you have any questions about whether an act of collaboration may be treated as academic dishonesty, please consult the instructor before you collaborate.