**CS102 - Algorithms and Programming II**

**Lab Programming Assignment 5**

**Supplementary Document**

**Fall 2021**

| **ATTENTION:**   1. Compress all of the Java program source files (.java) files into a single zip file. 2. The name of the zip file should follow the below convention:   **CS102\_Sec1\_Asgn5\_YourSurname\_YourName.zip**   1. Replace the variables “YourSurname” and “YourName” with your actual surname and name. 2. You may ask questions on Moodle. 3. Complete **all** of the assignment during the lab session and upload the above zip file to Moodle by the deadline. 4. This document is meant to be supplementary for the original Lab 5. |
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**The work must be done individually. Codesharing is strictly forbidden. We are using sophisticated tools to check the code similarities. The** [**Honor Code**](https://docs.google.com/document/d/1v_3ltpV_lClLsROXrMbojyuv4KrFQAm1uoz3SdC-7es/edit) **specifies what you can and cannot do. Breaking the rules will result in disciplinary action.**

**Q3** Write a recursive method that can detect if a number is even or odd without using modular arithmetic or bitwise operations.

**Q4** Write a recursive method that takes two numbers *n* and *k* as input and returns true only if *n* is a power of *k*.

**Q5** Write a recursive method that can detect if a set of numbers can be divided into two groups such that the summation of the numbers at both groups is a power of 2.

**Q6** Write a recursive method that reverses the elements of an array without creating a new copy of the array*.*

**NOTES**:

* Please reuse the available methods as much as you can instead of repeating the same code in different methods.
* Please comment your code according to the documentation and commenting conventions used in the textbook.