

Arab Academy for Science & Technology and Maritime Transport (AASTMT)
College of Computing and Information Technology (CCIT)



CS312: Computing Algorithms

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Section 1 – Sun 23/02/2014

Please attempt solving the following problems, and submit in Section 1 Submission Activity, on:

<http://moodle.manalhelal.com/course/view.php?id=6>

Q1. Most programming languages have a built-in integer data type. Normally this representation has a fixed size, thus placing a limit on how large a value can be stored in an integer variable. Describe a representation for integers that has no size restriction (other than the limits of the computer's available main memory), and thus no practical limit on how large an integer can be stored. Briefly show how your representation can be used to implement the operations of addition, multiplication, and exponentiation.

Q2. Write a function to transpose a sparse matrix:

Example of sparse matrix

```
[ 11 22 0 0 0 0 0 ]
[ 0 33 44 0 0 0 0 ]
[ 0 0 55 66 77 0 0 ]
[ 0 0 0 0 0 88 0 ]
[ 0 0 0 0 0 0 99 ]
```