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| Data Structures & Algorithms Diploma in IT, CSF  Year 2 (2024/25) Semester 4 | Week 7 |
| 2 Hours |
| **Practical 7 – Recursion** | |

**Objectives**

At the end of this practical, the students should be able to:

* Understand concept of recursion
* Apply use of recursion in simple applications

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| **IMPORTANT**   * Upload all your work to Brightspace by the designated time stated in Brightspace. |

1. Develop a recursive method power() that returns the result of **an**. The function prototype is given as follows:

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| //Calculates the value of a given integer raised to the power of a second integer  //param a – the base integer (to be raised to a power).  //param n – the power  //pre: a > 0  //post: return the value of a raised to the nth power.  **long power (int a, int n);** |

(**Hint:** For any integer *a* and for any integer *n* > 0, an = a \* an-1)

2. Implement the algorithm printBackward() to print the numbers in an array in the backward manner.

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| //print the numbers in an array in the backward manner  //param array – the array in concern  //param n – number of elements in the array  **void printBackward(int array[], int n);** |

3. Implement the algorithm maxArray() on an integer array, as discussed in the lecture.

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| //return the maximum value in an array of integers  //param array – the array in concern  //param start – start index of the array  //param end – last index of the array  **int maxArray(int array[], int start, int end);** |