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19CSE212 - Data Structures and Algorithms

Topic: Linked List

Home Work - 4

Class: B.Tech - 2019 - CSE - E **Posted on: 26. 01. 2021**

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1. Draw the node structure to store movie details such as name of the movie, month of the release, year of the release and genre of the movie. Also construct the linked list of 5 movies. (Just expecting the pictorial representation)
2. Draw the node structure of a polynomial expression and construct the linked list of the following polynomial. (Just expecting the pictorial representation)
    A. $2y^5 + 4y^4 - 3y^3 + 2x^2 + x + 8$
    B. $5y^5 - 7y^4 - 2x^2 + 8x - 5$
3. For a given singly linked list insert a node:
    a. at the beginning
    b. at the end
    c. at a given position k
    Input: value=8, k=4
    Existing Linked List: 1 -> 2 -> 5 -> 7-> 4 -> NULL
    Output:
    8 -> 1 -> 2 -> 5 -> 7 -> 4 -> NULL
    1 -> 2 -> 5 -> 7 -> 4 -> 8 -> NULL
    1 -> 2 -> 5 -> 8 -> 7 -> 4 -> NULL
4. Write an algorithm for printing the following in a given linked list:
    a. maximum
    b. minimum
5. Write the pseudocode to print the sum of all even numbers stored in a singly linked list. Also show the tracing of your algorithm diagrammatically.
6. Write the pseudocode to print the sum of all the elements in the singly linked list. Also show the tracing of your algorithm diagrammatically.

7. Write the pseudocode to print all the elements at the index of multiples of k with the first element assumed to have an index of 0. Do this for a single pass of the linked list.

   Input: k=3

   12 -> 15 -> 18 -> 17 -> 19 -> 20 -> 22 -> NULL

   Output: 12 -> 17 -> 22 -> NULL

8. Write the pseudocode to add two polynomials given in the Question No: 3 and create the resultant polynomial linked list.