JSS Mahavidyapeetha
JSS Science And Technology University
(Established Under JSS Science and Technology University Act No. 43 of 2013)
(Formerly Known as SJCE)

**Faculty : Prof. Sheela N** **Semester Starting:**

**Class & Section: III Sem.** **Semester Ending on:**

**Subject with Code: Data Structure Lab(CS36L)**

| Lab Session No. | Programs to be covered |
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| 1. | 1. Define a structure called Time containing 3 integer members(hour,minute,second). Develop a menu driven program to perform the following by writing separate function for each operation. a) To read time b) To display time c)To Update time d) Add two times by writing Add(T1,T2) which returns the new Time.<br><br>Update function increments the time by one second and returns the new time(if the increment results in 60 seconds, then the second member is set to zero and minute member is incremented by one. Then , if the result is 60 minutes, the minute member is set to zero and the hour member is incremented by one. Finally when the hour becomes 24, it is set to zero)<br>Note: Illustrate the use of pointer to a structure variable and passing and returning of structure type to and from the function(both by value and reference).<br><br>2. Define a structure called Student with the members: name, reg_no, marks in 3 tests and average_ marks.<br>Develop a menu driven program to perform the following by writing separate function for each operation: a)read information of N students b) display students information c) to calculate the average of best two test marks of each student.<br>Note: Illustrate the use of pointer to an array of structure and allocate memory dynamically using malloc() /calloc()/realloc().<br><br>3. Develop a menu driven program to implement various operations on array storage representation with static and dynamic memory allocation. |

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| 2 | 4. Develop a menu driven program to implement singly linked list with various operations such as<br>i) Insertion and Deletion at front/rear<br>ii) Insertion and Deletion at the specified position<br>iii) Delete by Key<br>iv) Search by key<br>v) Create an ordered list<br>vi) Reverse a list<br>vii) Creating a copy of the list |
| 3 | 5. Develop a menu driven program to implement Circular singly linked list with various operations such as<br>i) Insertion and Deletion at front/rear<br>ii) Insertion and Deletion at the specified position<br>iii) Delete by Key<br>iv) Search by key<br>v) Create an ordered list<br>vi) Reverse a list<br>vii) Creating a copy of the list |
| 4 | 6. Develop a menu driven program to implement Double linked list with various operations such as<br>i) Insertion and Deletion at front/rear<br>ii) Insertion and Deletion at the specified position<br>iii) Delete by Key<br>iv) Search by key<br>v) Create an ordered list<br>vi) Reverse a list<br>vii) Creating a copy of the list |

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| 5 | 7. Develop a menu driven program to implement Circular Double linked list with Header node to perform various operations such as<br>i) Insertion and Deletion at front/rear<br>ii) Insertion and Deletion at the specified position<br>iii) Delete by Key<br>iv) Search by key<br>v) Create an ordered list<br>vi) Reverse a list<br>vii) Creating a copy of the list |
| 6 | 8. Develop a menu driven program to implement Stack with static and dynamic memory allocation mechanism using array storage representation.(Represent Stack using structure)<br>9. To convert infix expression to postfix expression. b) To convert infix expression to prefix<br>10. To evaluate the postfix expression. |
| 7 | Develop a menu driven program s<br>6. To implement ordinary Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)<br>7. To implement Circular Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)<br>8. To implement Double Ended Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)<br>9. To implement Priority Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure) |
| 8 | 10. Develop a menu driven program to implement binary search tree and traversal techniques.<br>11. Develop a menu driven program to implement Graph traversal techniques. |
| 9 | **Lab Test** |

**Signature of staff** **Signature of H.O.D**