

Advanced Data Structures And Algorithms-Tutorial 1

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1. Problem Statements

P1 - Draw comparisons Between the sorting Algorithm Bubble Sort, Selection Sort , Insertion Sort ,Merge Sort and Heap Sort ?

P2- Write a program to find out factorial for larger value like (100,150 etc.)?Note: No use of library

P3-Justify the Time Complexity of give pseudo Code with proper reasoning;

a-)

```
int j = 0;
for(int i = 0; i < n; ++i) {
    while(j < n && arr[i] < arr[j]) {
        j++;
    }
}
```

b-)

```
int a = 0, i = N;
while (i > 0) {
    a += i;
    i /= 2;
}
```

P4-What is the additional benefit of a circular queue? Illustrate with at least 2 practical examples (programming/application) where a circular queue is used. Write the enqueue and deque functions/pseudocode (not the program) for array and linked list based implementation of a circular queue.