



Tutorial 05)-2

Q-01) What is Binary Search.

Binary searching is defined as a searching algorithm used in a sorted array by repeatedly dividing the search interval in half.

It should be arranged in ascending order.

Q-02) What are the advantages and disadvantages of Binary Search.

advantages	disadvantages
much faster algorithm.	It can be used only when data is sorted.
It works on the divide and conquers principle.	It is more complicated.
It is efficient.	If random access is not supported then efficiency might be lost.
It is a simple algorithm to understand.	It can be implemented only for two-way transversal data structure.



Q20) Write the algorithm of Binary Search.

```
BinarySearch(arr, target):
    5    left = 0
    6    right = length(arr) - 1
    7
    8    while left <= right:
    9        mid = left + (right - left) // 2
   10
   11        if arr[mid] == target:
   12            return mid
   13        else if arr[mid] < target:
   14            left = mid + 1
   15        else:
   16            right = mid - 1
   17
   18    return -1.
```

Q20) Write a simple C program for Binary Search.



```
int binarySearch (int arr[], int target, int left,
                  int right)
{
    while (left <= right)
    {
        int mid = left + (right - left) / 2;

        if (arr[mid] == target)
            return mid;
        else if (arr[mid] < target)
            left = mid + 1;
        else
            right = mid - 1;
    }
}

int main()
{
    int arr[] = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20};
    int n = sizeof(arr) / sizeof(arr[0]);
    int target = 12;

    int result = binarySearch(arr, target, 0, n-1);
    if (result == -1)
        printf("target not found in the array");
    else
        printf("target found at index %d", result);
    return 0;
}
```