

A word cloud shaped like a brain, containing various terms related to problem-solving and cognitive processes. The most prominent words are 'complex', 'solution', 'problem', 'solving', 'using', and 'computers'. Other visible words include 'research', 'tasks', 'defined', 'process', 'best', 'simple', 'difficult', 'cognitive', 'steps', 'initiated', 'analysis', 'study', 'technique', 'developing', 'theory', 'analyzed', 'clarity', 'simulation', 'relation', 'skill', 'goal', 'work', 'large', 'system', 'approaches', 'focuses', 'past', 'include', 'decision', 'share', 'found', 'control', 'taken', 'life', 'resolution', 'psychology', 'book', 'psychologists', 'field', 'try', 'novel', 'emphasis', 'attempts', 'directly', 'solve', 'emotional', 'goals', 'logic', 'disrupt', 'novel', 'emphasis', 'attempts', 'directly', 'solve', 'emotional', 'goals', 'logic', 'disrupt'.

problem solving using computers

CSE 1051





Bubble Sorting

S13_1



Objectives

To learn and appreciate the following concepts

Sorting Technique

- Bubble Sort
- Bubble Sort with strings



Session Outcome

- At the end of the session the student will be able to understand:
 - Importance of bubble sorting on integers and strings

Sorting

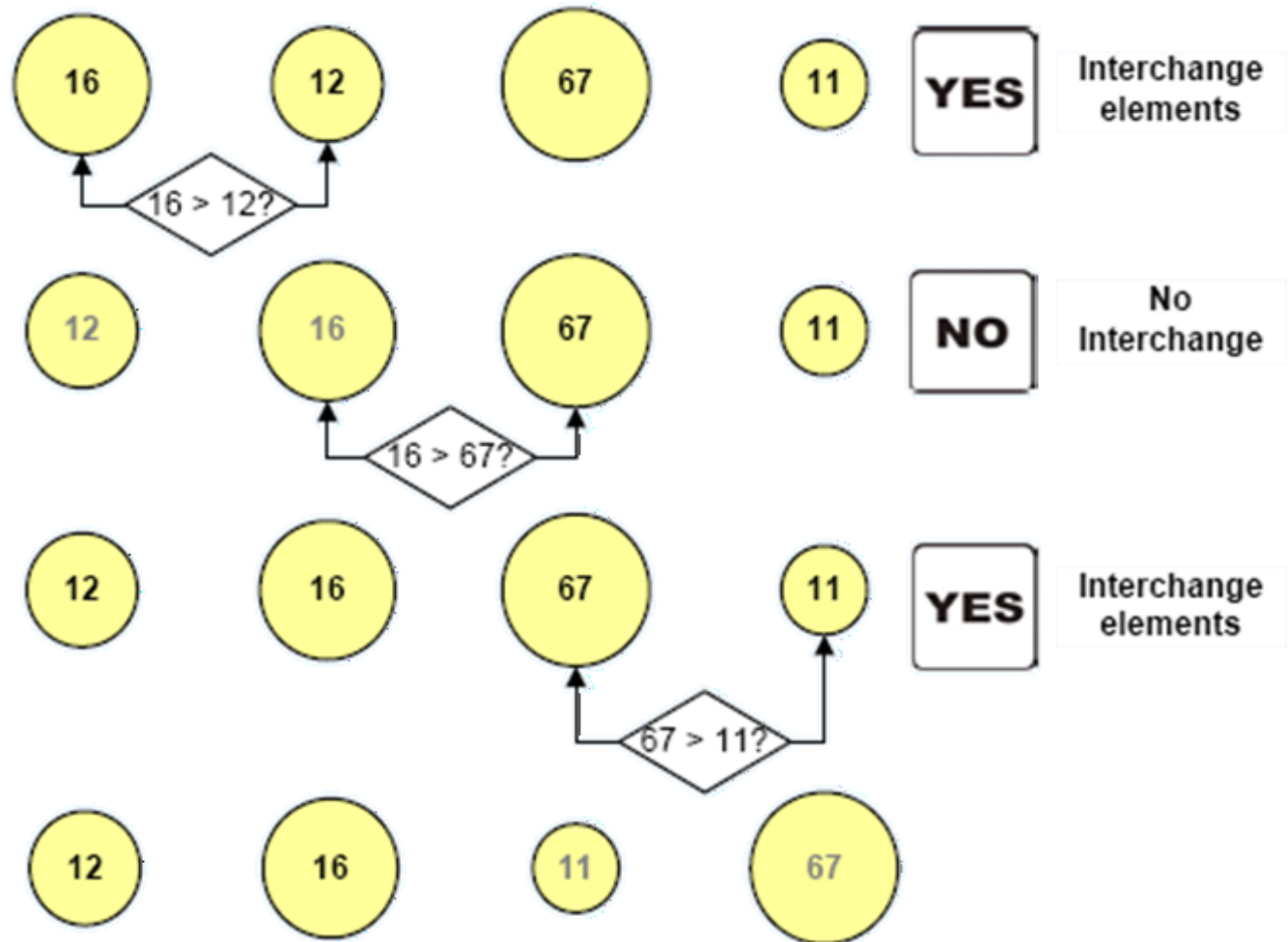
Arrangement of data elements in a particular order.



1. **Bubble Sort**
2. **Selection Sort**

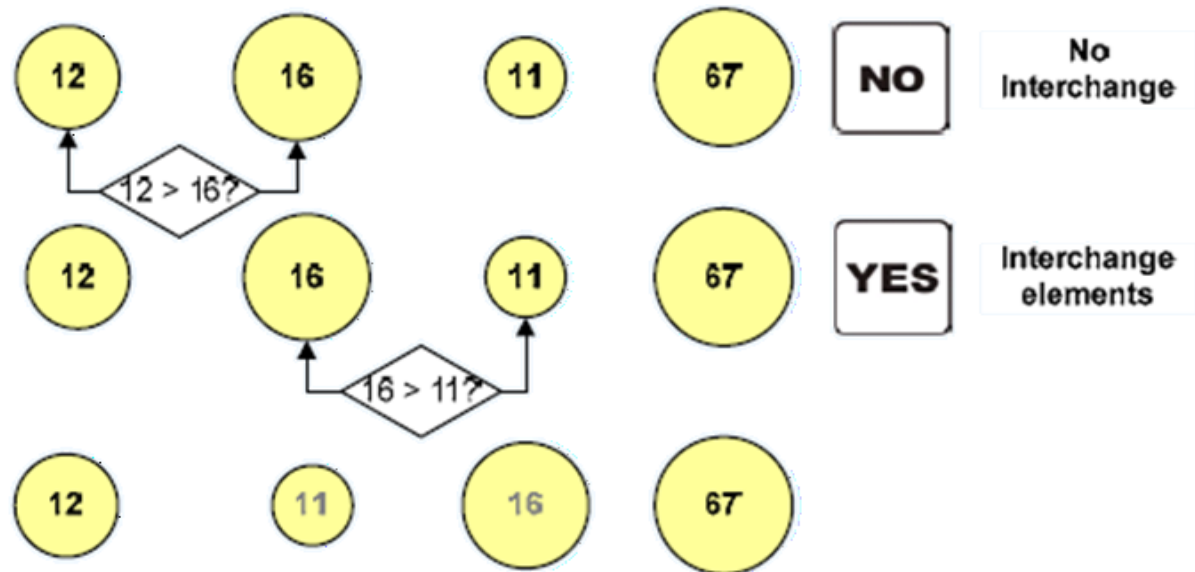
Bubble Sort- Illustration

Pass 1

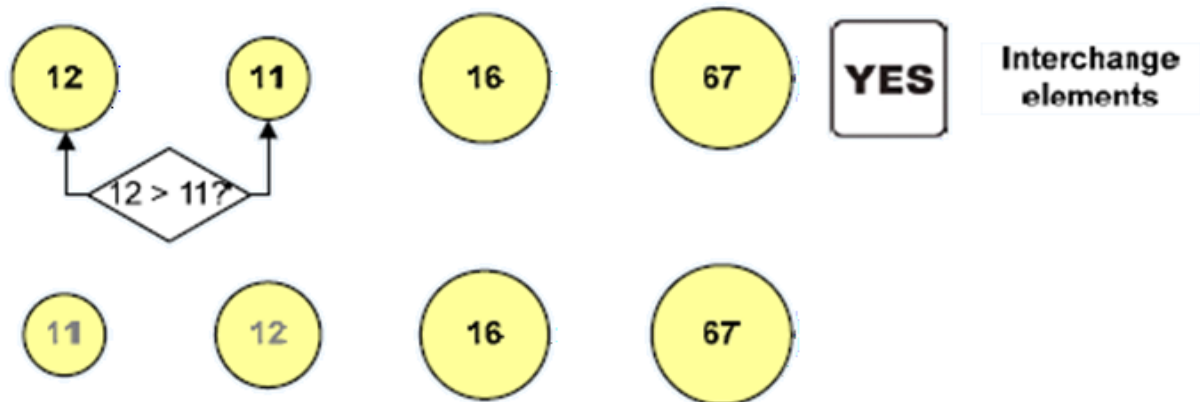


Bubble Sort- Illustration

Pass 2



Pass 3



Bubble Sort procedure

```
// reading array elements
for(i=0;i<n; i++)
    scanf("%d", &a[i]);
// bubble sorting procedure
for(i=0; i<n-1; i++) { //pass
    for(j=0; j<n-i-1; j++) {
        if(a[j] > a[j+1]) // comparison
        { // interchange
            temp = a[j];
            a[j] = a[j+1];
            a[j+1] = temp;
        }
    }
}
```

Example :

a[]={16, 12, 67, 11}

Array after sorting (ascending):

a[]={11, 12, 16, 67}

```
Enter the limits: 4
Enter the elements:
16
12
67
11
The entered elements are:
16      12      67      11
The Sorted array:
11      12      16      67
```




Bubble Sort- Illustration

6 5 3 1 8 7 2 4



Go to posts/chat box for the link to the question
submit your solution in next 2 minutes
The session will resume in 3 minutes

Strings Bubble Sort

```
int main() {  
    char string[30][30], temp[30];  
    int no, i, j;  
    printf("\nEnter the no of strings:");  
    scanf("%d", &no);  
    printf("\nEnter the strings:");  
    for(i=0; i<no; i++)  
        gets(string[i]);
```

```
Enter the no of strings: 4  
Enter the strings:  
Mangalore to delhi  
Ambala to Delhi  
Jaipur to Delhi  
Kolkatta to Delhi  
The entered strings are:  
Mangalore to delhi  
Ambala to Delhi  
Jaipur to Delhi  
Kolkatta to Delhi  
The sorted array of strings:  
Ambala to Delhi  
Jaipur to Delhi  
Kolkatta to Delhi  
Mangalore to delhi
```

```
    for(i=0; i<no-1; i++)  
        for(j=0; j<no-i-1; j++)  
        {  
            if(strcmp(string[j], string[j+1])>0)  
            {  
                strcpy (temp, string[j]);  
                strcpy (string[j], string[j+1]);  
                strcpy (string[j+1], temp);  
            }  
        }  
    printf("\n The sorted array of strings:");  
    for(i=0; i<no; i++)  
        puts(string[i]);  
    return 0;  
}
```



Summary

- Bubble Sort
- Bubble sort with strings