Homework Questions of 11/02/2023

Ques 1 Union of 2 arrays with the duplicate cases

i/p → a[ ] = {1, 2, 3, 4}
b[ ] = {2, 3, 4, 5}

o/p → {1, 2, 3, 4, 5}

Algorithm

1) Make an output vector and also make a bool variable & initialize it with false.
2) Insert all the elements of a in the output vector.

3) Now we will go to array b & traverse it. We will also check each element of b in output vector simultaneously & if we find the element, we make boolean variable true & break the inner for loop.

4) If the boolean variable is false, then only insert into the output vector.

Code

```
vector <int> output;
bool flag = false;
// Insert all elements of a array
for (int i=0; i<sizea; i++) {
        output.push_back (a[i]);
}
// Before inserting elements of b, check element in output or not.
for (int i=0; i<sizeb; i++) {
        flag = false;
        for (int j=0; j<output.size(); j++){

                if (b[i] == output[j]) {
                        flag = true;
                        break;
                }
        }
        if (!flag) {
                output.push_back (b[i]);
        }
}
// Simply print the array elements
```

```
for (int i=0; i< output.size(); i++) {
        cout << output[i] << "  ";
}
```

Ques2 Find four numbers in an array whose sum is equal to particular value.

i/p → a[] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
sum = 10
o/p → (1, 2, 3, 4)

The algorithm is same as that of pair or triplet sum just we need 4 nested for loops to solve the particular problem.

Code

```
for (int i=0; i< sizea; i++) {
    for (int j= i+1; j<sizea; j++) {
        for (int k= j+1; k <sizea; k++) {
            for (int l= k+1; l < sizea; l++) {
                if (a[i] + a[j] + a[k] + a[l] == sum) {
                cout << "(" << a[i] << "," << a[j]
                << "," << a[k] << "," << a[l] <<
                ")"  << endl;
            }
        }
    }
}
```