Question 1:

Source code:

```
#include <stdio.h>


int insert()
{

	int i ; //loop variable
	int position;
	int n;// number of elements in the array
	int array[50];
	int value;//new data element to be sorted in array

	printf("Enter the amount of element in the array : \n");//how much you wanna enter
	scanf("%d",&n);

	printf("Enter %d elements: \n", n );//giving the element according to the above number

	for(i=0;i<n;i++)
		scanf("%d", &array[i]);


	printf("Enter the location you wanna insert: \n");//making user to give location
	scanf("%d", &position);

	//giving the user input values
	printf("Enter the value you wanna insert: \n");
	scanf("%d", &value);

	// now shift rest of the elements downwards
	for (i =n-1; i >=position-1; i--)

		array[i+1] = array[i];

	array[position-1]=value;
	printf("Now the new array after inserting is: \n");

	for(i=0;i<=n;i++)
		printf("%d\n",array[i] );

	return 0;


}

int delete()
{

	int array[50];
```

```
        int position;
        int i ; //loop variable
        int n;              // number of elements in the array
        int value;//new data element to be sorted in array

        printf("Enter the amount of element in the array: \n");//how much you wanna enter
        scanf("%d",&n);

        printf("Enter %d elements: \n", n );//giving the element according to the above number

        for(i=0;i<n;i++)
                scanf("%d", &array[i]);


        printf("Enter the location where you wish to delete element: \n");
        scanf("%d", &position);

  if (position >= n+1)
    printf("Deletion not possible\n");
  else
  {
    for (i = position - 1; i < n - 1; i++)
      array[i] = array[i+1];

    printf("Resultant array:\n");

    for (i = 0; i < n - 1; i++)
      printf("%d\n", array[i]);
  }

  return 0;
}

int sum()
{
        printf("To find the sum of an even and odd numbers from array: \n");
        int max[10];
        int size;
        int even=0,odd=0;

        printf("Enter the size of array: \n");
        scanf("%d", &size);

        printf("Enter %d elements: \n", size );

        for(int i=0;i<size;i++){
                scanf("%d", &max[i]);
        }
        for(int i=0;i<size;i++){
                if(max[i]%2==0){
                        even=even+max[i];
                }
```

```
                else{
                        odd=odd+max[i];
                }
        }
        printf("\nThe sum of even numbers are: %d", even);
        printf("\nThe sum of odd numbers are: %d\n", odd);

        return 0;
}

int concatenate()
{

        int array[50];
  int even[5] = {0, 2, 4, 6, 8};
  int odd[5]  = {1, 3, 5, 7, 9};

  int loop, index, e_len, o_len;

  e_len = o_len = 5;

  index = 0;

  for(loop = 0; loop < e_len; loop++) {
    array[index] = even[loop];
    index++;
  }

  for(loop = 0; loop < o_len; loop++) {
    array[index] = odd[loop];
    index++;
  }

  printf("\nEven -> ");

  for(loop = 0; loop < e_len; loop++)
    printf(" %d", even[loop]);

  printf("\nOdd  -> ");

  for(loop = 0; loop < o_len; loop++)
    printf(" %d", odd[loop]);

  printf("\nConcat array is-> ");

  for(loop = 0; loop < 10; loop++)
    printf(" %d", array[loop]);

  return 0;
}

int main()
```

```
{
        int choice;


                printf("-------------------------\n");
                printf(" 1 --> Insert a number at a given position in an array of numbers\n");
                printf(" 2 --> Delete from a given position in an array of numbers.\n");
                printf(" 3 --> Find the sum of even and odd elements of array separately\n");
                printf(" 4 --> concatenate two arrays\n");
                printf("Enter the choice_no: \n");
                scanf("%d", &choice);

                switch(choice)
                {
                        case 1:
                        insert();
                        break;
                        case 2:
                        delete();
                         break;

                        case 3:
                        sum();
                        break;

                        case 4:
                        concatenate();
                        break;

                        default:
                        printf("Error in your choice_no\n");
                        break;
                        }
 }
```

Output:

```
--------------------------------------------------------------------------
 1 --> Insert a number at a given position in an array of numbers
 2 --> Delete from a given position in an array of numbers.
 3 --> Find the sum of even and odd elements of array separately
 4 --> concatenate two arrays
Enter the choice_no:
3
To find the sum of an even and odd numbers from array:
Enter the size of array:
4
Enter 4 elements:
1
4
6
5

The sum of even numbers are: 10
The sum of odd numbers are: 6
```

Question 2

Source code:

```
#include <stdio.h>
int largest(int array[3][5][5],int size)
{
   int a,b,c;

   int max = array[0][0][0];


   for (a = 0; a < 3; a++){
      for(b = 0; b < 5; b++ ){
         for (c = 0; c < 5; c++){
            if (array[a][b][c] > max)
            max = array[a][b][c];

         }
      }
   }

   return max;
}

int main(){


         int array[3][5][5]={

                        {
                              {1,2,3,4,5},
                              {9,8,6,5,9},
                              {8,7,6,2,9},
                              {1,5,3,7,1},
                              {9,5,3,6,7}
                        },
                        {
                              {8,4,6,9,7},
                              {5,20,8,2,6},
                              {8,7,5,4,9},
                              {5,6,4,8,9},
                              {1,2,4,8,5}
                        },
                        {
                              {8,9,7,5,6},
                              {1,2,3,4,6},
                              {5,4,8,7,2},
                              {1,4,8,5,2},
                              {10,2,5,8,9}
                        }
```

```
        };

        int size = sizeof(array)/sizeof(array[0][0][0]);
    printf("Largest element in the array is:  %d\n", largest(array, size));
    return 0;
}
```

Output:

Largest element in the array is: 20

Question 3

Source code:

```
#include <stdio.h>
int main() {
   int a[5][5], transpose[5][5], rows, columns, i, j;

   printf("Enter rows and columns: ");
   scanf("%d %d", &rows, &columns);

   // Assigning elements to the matrix
   printf("\nEnter matrix elements:\n");
   for (i = 0; i < rows; ++i)
      for (j = 0; j < columns; ++j) {
         printf("Enter element a%d%d: ", i + 1, j + 1);
         scanf("%d", &a[i][j]);
      }

   // Displaying the matrix a[][]
   printf("\nEntered matrix: \n");
   for (i = 0; i < rows; ++i)
      for (j = 0; j < columns; ++j) {
         printf("%d  ", a[i][j]);
         if (j == columns - 1)
            printf("\n");
      }

   // Finding the transpose of matrix a
   for (i = 0; i < rows; ++i)
      for (j = 0; j < columns; ++j) {
         transpose[j][i] = a[i][j];
      }

   // Displaying the transpose of matrix a
   printf("\nTranspose of the matrix:\n");
   for (i = 0; i < columns; ++i)
      for (j = 0; j < rows; ++j) {
         printf("%d  ", transpose[i][j]);
         if (j == rows - 1)
            printf("\n");
      }
   return 0;
}
```

Output:

```
Enter rows and columns: 2 2

Enter matrix elements:
Enter element a11: 1
Enter element a12: 2
Enter element a21: 3
Enter element a22: 4

Entered matrix:
1  2
3  4

Transpose of the matrix:
1  3
2  4
```

Question 4

Source code:

```
#include <stdio.h>
#include<string.h>
int main()
{
	int i, j, found = 0;
	char *country[][2] =
	{
		{ "Bhutan" },
		{ "Thailand" },
		{ "Russia" },
		{ "China" }
	}, name[20];

	char *city[][2] =
	{
		{ "Thimphu" },
		{ "Bangkok" },
		{ "Moscow" },
		{ "Beijing" }
	};
	printf("Enter Country Name: \n");
	scanf("%s",&*name);

	for(i = 0; i < 5; i++)
	{
	if(strcmp(name, *country[i]) == 0 )
	{
		found = 1;
		break;
	}
}
	if(found==1)
	{
		printf("\nThe Capital City Of %s Is %s.\n", name, &*city[i][j]);
	}
	else
	{
	printf("Error\n");
	}
	return 0;
}
```

Output:

```
Enter Country Name:
Spain

The Capital City Of Spain Is Madrid.
```