Name - Chiradeep Banik. Enrol - 20UCS176 Sec-A.

Q.1 Accept an integer NUM from the user and display its address and value. using the pointer methodologies.

→

```
#include <stdio.h>

void print_addr (int* ptr) {
    printf ("Enter an integere : ");
    scanf ("%d", ptr);
    printf ("Address : %p Value : %d \n", ptr, *ptr);
}

void main() {
    int num;
    int* ptr = &num;
    print_addr (ptr);
}
```

---

console

→ Enter an integere : 13

→ Address : 0x7ffe49fe5cc4 Value : 13.

Q.2 Implement a pointer to an array to display all the array elements alongside the addresses.

→
```
#include <stdio.h>
void print_arr(int len){
    int arr[len];
    printf("Enter the array elements : ");
    for(int i=0; i<len; i++){
        scanf("%d", &arr[i]);
    }
    int* ptr = arr;
    for(int j=0; j<len; j++){
        printf("Address : %p value : %d\n", (ptr+i),
                                    *(ptr+i));
    }
}
void main(){
    int num;
    printf("Enter the length of the array : ");
    scanf("%d", &num);
    print_arr(num);
}
```

Console

→ Enter the length of the array : 3

→ Enter the array elements : 1 2 13

→ Address : 0x7fff0490cbe0 value : 1

Address : 0x7fff0490cbe4 value : 2

Address : 0x7fff0490cbe8 value : 13.

Q.3 Accept an array of integers ARR[] from the user to implement a call by reference and find the sum of the odd numbers and even numbers seperately.

→

```
#include<stdio.h>
int odd_sum(int* arr, int arr_length){
    int odd_sum=0;
    for(int i=0; i<arr_length; i++){
        if(*(arr+i)%2 != 0){
            odd_sum += *(arr+i);
        }
    }
    return odd_sum;
}
```

```
int even_sum (int* arr, int arr_length){
    int even_sum=0
    for (int i=0 ; i<arr_length; i++){
        if(*(arr+i)%2 ==0){
            even_sum += *(arr+i);
        }
    }
    return even_sum;
}
void main(){
    int arr_length;
    printf("Enter the length of the array: ");
    scanf("%d", &arr_length);
    int arr[arr_length];
    printf("Enter the elements of the array: ");
    for (int i=0 ; i<arr_length; i++){
        scanf("%d", &arr[i]);
    }
    printf("The sum of the odd numbers is %d\n",
                                odd_sum(arr, arr_length));
    printf("The sum of the even numbers is %d\n",
                                even_sum(arr, arr_length));
}
```

→

Console

→ Enter the length of the array : 3

→ Enter the elements of the array : 1 2 13

→ The sum of the odd numbers is 14

The sum of the even numbers is 2

Q.4 Design a 2D matrix of size 4×4 and display the elements using pointer to array

→

```
#include <stdio.h>
void make_matrix (int * ptr){
    for (int i=0; i<4; i++){
        printf("Enter the values of %dth row",(i+1));
        for (int j=0; j<4; j++){
            scanf("%d",(ptr+i*4+j));
        }
    }
}
```

→

```
void display_matrix (int* ptr){
    printf ("The elements of the matrix are :");
    for(int i=0 ; i<16 ; i++){
        if (i%4==0){
            printf ("\n");
        }
        printf ("%d", *(ptr+i));
    }
    printf ("\n");
}
void main (){
    int arr[4][4];
    int* ptr = &arr[0][0];
    make_matrix (ptr);
    display_matrix (ptr);
}
```

Console

→ Enter the values of 1th row : 1 2 3 4
→ Enter the values of 2th row : 2 3 4 5
→ Enter the values of 3th row : 3 4 5 6
→ Enter the values of 4th row : 4 5 6 7
→ The elements of the matrix are :

1 2 3 4
2 3 4 5
3 4 5 6
4 5 6 7