Answer Script

Question No. 01

Question: Write a C program to take positive integer **N** as input and print a pattern shown in the sample input output.

Marks: 20

Constraints: 1 <= N <= 5

Answer No. 01

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int main()
{
    int n;
    scanf("%lld", &n);
    int s = n - 1, k = 1;
    for (int i = 1; i <= (2 * n - 1); i++)
    {
        for (int i = 1; i <= s; i++)
        {
            printf(" ");
        }
        for (int i = 1; i <= k; i++)
        {
            printf("%lld", i);
        }
        printf("\n");
        if (i < n)
        {
```

```c
                s -= 1;
                k += 2;
            }
            else
            {
                s += 1;
                k -= 2;
            }
        }
        return 0;
}
```

Question: Write a C program to take positive integer **N** as input and print a pattern shown in the sample input output.

Marks: 20

Constraints: $1 <= N <= 9$

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int main()
{
    int n;
    scanf("%lld", &n);
    int s = n - 1, k = 1;
```

```c
    for (int i = 1; i <= n; i++)
    {
        for (int i = 1; i <= s; i++)
        {
            printf(" ");
        }
        for (int i = 1; i <= k; i++)
        {
            printf("%lld", k);
        }
        printf("\n");
        if (i <= n)
        {
            s -= 1;
            k += 1;
        }
    }
    return 0;
}
```

Question No. 03

Question: Write a function named **count_before_zero()** which receives an array of integers and the size of that array and counts the number of elements in that array until you find zero and returns that count. Call that function in the main function and print the count there.

Answer No. 03

```c
#include <stdio.h>
```

```c
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int cntNum(int a[], int n)
{
    int cnt = 0;
    for (int i = 0; i < n; i++)
    {
        if (a[i] == 0)
        {
            break;
        }
        cnt++;
    }
    return cnt;
}
int main()
{
    int n;
    scanf("%lld", &n);
    int a[n];
    for (int i = 0; i < n; i++)
    {
        scanf("%lld", &a[i]);
    }
    printf("%lld", cntNum(a, n));

    return 0;
}
```

Question No. 04

Question: Show the 4 types of examples of functions given below with an example. You can give any example you want, but make sure you are giving different examples for all the four types..

Marks: 20

1. Has Return + Parameter
2. Has Return + No Parameter
3. No Return + Parameter
4. No Return + No Parameter

Answer No. 04

1)Ans:

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int add(int *x, int *y)
{
    return (*x + *y);
}
int main()
{

    int x = 1, y = 2;
    int sum = add(&x, &y);
    printf("%lld", sum); // sum will be 3

    return 0;
}
```

2)Ans:

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
```

```c
#define int long long
int x, y;
int subtraction()
{
    return (x - y);
}
int main()
{

    x = 2, y = 1;
    int sum = subtraction();
    printf("%lld", sum);//sum will be 1
    return 0;

}
```

3)Ans:

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int a[10];
void countNegative(int a[])
{
    int cnt = 0;
    for (int i = 0; i < 10; i++)
    {
        if (a[i] < 0)
        {
            cnt++;
        }
    }
    printf("count of negative numbers: %lld", cnt);
}
int main()
{
    for (int i = 0; i < 10; i++)
    {
        scanf("%lld", &a[i]);
    }
```

```c
        countNegative(a);

        return 0;
}
```

4)Ans:

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
int a[10];
void countEven()
{
    int cnt = 0;
    for (int i = 0; i < 10; i++)
    {
        if (a[i] % 2 == 0)
        {
            cnt++;
        }
    }
    printf("Number of even numbers in array: %lld", cnt);
}
int main()
{
    for (int i = 0; i < 10; i++)
    {
        scanf("%lld", &a[i]);
    }
    countEven();

    return 0;
}
```

Question No. 05

Question: Write a function named **is_palindrome()** which will receive a string as parameter from the main function and this function will return 1 if the string is palindrome, otherwise it will return 0. And with the help of this 1 or 0 print "Palindrome" or "Not Palindrome" in the main function.

Answer No. 05

```c
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
#define int long long
char s[100005];
int is_palindrome(int n)
{
    int low = 0;
    int high = n - 1;

    while (high > low)
    {
        if (s[low++] != s[high--])
        {
            return 0;
        }
    }
    return 1;
}
int main()
{
    scanf("%s", &s);

    int n = strlen(s);

    if (is_palindrome(n) == 1)
```

```
    {
        printf("Palindrome");
    }
    else
    {
        printf("Not Palindrome");
    }
    return 0;
}
```

Question No. 06

Explain about **pass by value** and **pass by reference** with an example.

Answer No. 06

Pass by value means passing copy of value into the function and function cannot modify the value outside of the function scope. But pass by reference means we are not passing the copy of the values or variables we are passing original memory address by dereferencing using pointers, and this time function can modify the value outside of function scope.
Pass by value example:

```c
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<stdlib.h>
#define int long long
void add(int x,int y){
    x=10;
    int sum = x+y;
    printf("%lld\n",sum);
    printf("value of x is: %lld\n",x);
}
```

```c
int main(){
int x=2,y=3;
add(x,y);
printf("value of x is: %lld\n",x);
return 0;
}
```

Pass by reference example:

```c
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<stdlib.h>
#define int long long
void add(int *x,int *y){
    *x=10;
    int sum = *x+*y;
    printf("%lld\n",sum);
    printf("value of x is: %lld\n",x);
}
int main(){
int x=2,y=3;
add(&x,&y);
printf("value of x is: %lld\n",x);
return 0;
}
```