C assignments – Day 21(21-Sept-2022)

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All the questions are typed in comments of the code.

21-Sept-2022

Que-1

```c
/* Write n progrnm to rend n number nnd choice from the user.
If choice is 1, check wheather the number is perfect or not.
If choice is 2, check wheather the number is palindrome or not.
If choice is 3, check wheather the number is Armstrong number or not.
If choice is 4, exit the progrnm.
Defnult continue agnin and agnin until user enters a correct choice.
*/

#include <stdio.h>
void main()
{
    int n, choice;
    int sum = 0, i = 1;
    int reversed = 0, c, d;
    printf("Enter the number\n");
    scanf("%d", &n);
ABC:
    printf("Enter your choice\n");
    scanf("%d", &choice);
    switch (choice)
    {
    case 1:
        while (i < n / 2)

        {
            if (n % i == 0)
            {
                sum += i;
            }
            i++;
        }
        if (sum == n)
            printf("The entered number is a perfect number.");
        else
```

```
            printf("The given number is not a perfect number.");

        break;

    case 2:

        c = n;
        while (c != 0)
        {
            d = c % 10;
            reversed = reversed * 10 + d;
            c /= 10;
        }
        if (reversed == n)
            printf("The given number is a palindrome");
        else
            printf("The entered number is not a palindrome.");

    case 3:
        if (n / 1000 == 0)
        {
            d = n;
            while (d > 0)
            {
                c = d % 10;
                c *= c * c;
                sum += c;
                d /= 10;
            }
            if (sum == n)
                printf("The entered number is an Armstrong number.");
            else
                printf("The entered number is an not Armstrong number.");
        }
        else
            printf("Choice three is valid for 3 digit numbers only.");

    case 4:
        break;

    default:
        printf("Please enter the correct choice\n");
        goto ABC;
    }
}
```

Que-2

```c
// Print a diamond pattern by taking an input from the user.
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= n - i; j++)
        {
            printf(" ");
        }

        for (k = 1; k <= i; k++)
        {
            printf("* ");
        }
        i++;
    }
    i = 1;
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= i; j++)
        {
            printf(" ");
        }
        for (k = n; k >= i+1; k--)
        {
            printf("* ");
        }
        i++;
    }
}
```

Que-3

```c
/* Print the following pattern.
 *
 * *
 * * *
 * * * *
 * * * * *
 */

#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
            k = 1;
            for (k; k <= i; k++)
            {
                printf("* ");
            }
        i++;
    }
}
```

Que-4

```c
/* Print the following pattern.
    1
   2 2
  3 3 3
4 4 4 4 4
*/
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
```

```
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= n - i; j++)
        {
            printf(" ");
        }
        k = 1;
        for (k = 1; k <= i; k++)
        {
            printf("%d ", i);
        }
        i++;
    }
}
```

Que-5

```
/* Print the following pattern.
1
01
101
0101
10101
*/
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= i; j++)
        {

            if (j % 2 == 1)
                printf("1 ");
            else
                printf("0 ");
        }

        i++;
```

```
    }
}
```

Que-6

```
/*
Print the following pattern.
    *
   * *
  * * *
* * * * *
*/
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= n - i; j++)
        {
            printf(" ");
        }

        for (k = 1; k <= i; k++)
        {
            printf("* ");
        }
        i++;
    }
}
```

Que-7

```
/*
Print the following pattern.
    *
   ***
  *****
 *******
```

```
 Each line should contain an odd numbers of asteric.
*/
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= n - i; j++)
        {
            printf(" ");
        }

        for (k = 1; k <= 2*i-1; k++)
        {
            printf("*");
        }
        i++;
    }
}
```

Que-8

```
/*
Print the following pattern.
    *
   ***
  *****
 *******
 Each line should contain an odd numbers of asteric.
*/
#include <stdio.h>
void main()
{
    int i = 1, n, j, k;
    printf("How many lines you want to print?\n");
    scanf("%d", &n);
    while (i <= n)
    {
        printf("\n");
        for (j = 1; j <= n - i; j++)
        {
```

```
            printf(" ");
        }

        for (k = 1; k <= 2*i-1; k++)
        {
            printf("*");
        }
        i++;
    }
}
```

22-Sept-2022

Que-1

```
// Write a program to read 10 elements in an integer array and display them.
#include <stdio.h>
void main(){
    int array[10], i;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++){
        scanf("%d", &array[i]);
    }
    printf("Array elements entered are:\n");
    for (i = 0; i < 10; i++){
        printf("%d\t", array[i]);
    }
}
```

Que-2

```
// Write a program to convert a decimal into binary with an array.
#include <stdio.h>
void main()
{
    int a, array_size = 0;
    printf("Enter a decimal number\n");
    scanf("%d", &a);
    int b = a, c;
    while (b > 0)
    {
        b /= 2;
        array_size++;
```

```
    }
    printf("%d\n", array_size);
    int array[array_size - 1];
    for (int i = array_size - 1; i >= 0; i--)
    {
        array[i] = a % 2;
        // printf("%d ", array[i]);
        a /= 2;
    }
    printf("\n");
    for (int i = 0; i < 8; i++)
    {
        printf("%d ", array[i]);
    }
    printf("\nSize of array %d", sizeof(array));
}
```

Que-3

```
// Write a program to read 10 elements in an array and display the even elements.
#include <stdio.h>
void main(){
    int array[10], i;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++){
        scanf("%d", &array[i]);
    }
    printf("Even array elements are:\n");
    for (i = 0; i < 10; i++){
        if(array[i]%2==0)
        printf("%d\t", array[i]);
    }
}
```

Que-4

```
// Write a program to read 10 elements in an array and display the odd elements.
#include <stdio.h>
void main(){
    int array[10], i;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++){
        scanf("%d", &array[i]);
```

```
    }
    printf("Odd array elements are:\n");
    for (i = 0; i < 10; i++){
        if(array[i]%2==1)
        printf("%d\t", array[i]);
    }
}
```

Que-5

```
// Write a program to multiply 10 array elements.
#include <stdio.h>
void main(){
    float a[10];
    printf("Enter your elements\n");
    for (int i = 0; i<10; i++){
        scanf("%f", &a[i]);
    }
    float mult = 1;
    for (int j = 0; j< 10; j++){
        mult*=a[j];
    }
    printf("The multiplication of the entered array elements is %.3f ",mult);
}
```

Que-6

```
// Write a program to read 10 elements in an float array and display them.
#include <stdio.h>
void main(){
    float array[10] ;
    int i;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++){
        scanf("%f", &array[i]);
    }
    printf("Array elements entered are:\n");
    for (i = 0; i < 10; i++){
        printf("%.2f\t", array[i]);
    }
}
```

Que-7

```
// Write a program to read 10 elements in an array and find wheather the sum of
the maximum and minimum element of that array is prime or not.
#include <stdio.h>
void main()
{
    int array[10], i;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++)
    {
        scanf("%d", &array[i]);
    }
    int min = array[0];
    int max = array[0];
    for (i = 1; i < 10; i++)
    {
        if (array[i] < min)
            min = array[i];
    }
    for (i = 1; i < 10; i++)
    {
        if (array[i] > max)
            max = array[i];
    }
    int sum = min + max;
    int primechecker = 1;
    for (i = 2; i <= sum / 2; i++)
    {
        if (sum % i == 0)
            primechecker = 0;
    }
    if(primechecker==1)
    printf("The sum of maximum element i.e. %d and minimum element i.e. %d of an
entered array is prime",max, min);
    else
    printf("The sum of maximum element i.e. %d and minimum element i.e. %d of an
entered array is not prime",max, min);
}
```

23-Sept-2022

Que-1

```c
// Write a program in C to copy the elements of one array into another array

#include <stdio.h>
void main()
{
    int array1[10], array2[10];
    printf("Enter array elements\n");
    for (int i = 0; i < 10; i++)
    {
        scanf("%d", &array1[i]);
    }
    printf("The first array elements are \n");
    for (int i = 0; i < 10; i++)
    {
        printf("%d ", array1[i]);
    }
    for (int i = 0; i < 10; i++)
    {
        array2[i] = array1[i];
    }
    printf("\nCoppied array elements are \n");
    for (int i = 0; i < 10; i++)
    {
        printf("%d ", array2[i]);
    }
    for (int i = 0, j = 9; i<10, j>=0; i++, j--)
    {
        array2[i] = array1[j];
    }
    printf("\nReversed  opied array elements are \n");
    for (int i = 0; i < 10; i++)
    {
        printf("%d ", array2[i]);
    }
}
```

Que-2

```c
// Write a program in C to add the elements of two same size matrices.
#include <stdio.h>
void main(){
    int a[3][4]={1,2,3,4,5,6,7,8,9,10,11,12};
    int b[3][4]={1,2,3,4,5,6,7,8,9,10,11,12};
    int sum[3][4];
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            sum[i][j] = a[i][j] + a[i][j];
        }
        printf("\n");
    }
    printf("The sum matrix of the added elements is\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("%d ",sum[i][j]);
        }
        printf("\n");
    }

}
```

Que-3

```c
// Write a program in C to add the elements of two same size matrices by taking
input from the user.
#include <stdio.h>
void main()
{
    int a[3][4];
    int b[3][4];
    printf("Enter the elements of the first matrix\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            printf("a[%d][%d]\n",i,j);
```

```
            scanf("%d",&a[i][j]);
        }
        printf("\n");
    }

    printf("Enter the elements of the second matrix\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            printf("a[%d][%d]\n",i,j);
            scanf("%d",&a[i][j]);
        }
        printf("\n");
    }
    int sum[3][4];
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            sum[i][j] = a[i][j] + a[i][j];
        }
        printf("\n");
    }
    printf("\nThe sum matrix after adding two matrices is\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            printf("%d ", sum[i][j]);
        }
        printf("\n");
    }
}
```

Que-4

```
// Write a program to find the even elements in a 2D array.
#include <stdio.h>
void main(){
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
```

```
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("a[%d][%d]= ?\n",i,j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\nThe even elements in the array are\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            if (a[i][j]%2==0)
            printf("%d ",a[i][j]);
        }
    }
}
```

Que-5

```
// Write a program to find the odd elements in a 2D array.
#include <stdio.h>
void main(){
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("a[%d][%d]= ?\n",i,j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\nThe odd elements in the array are\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            if (a[i][j]%2==1)
            printf("%d ",a[i][j]);
        }
    }
}
```

Que-6

```c
// Write a program to find the maximum element in a 2D array.
#include <stdio.h>
void main(){
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("a[%d][%d]= ?\n",i,j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\n");
    int max = a[0][0];
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            if (a[i][j]>max)
            max = a[i][j];
        }
    }
    printf("The maximum element of the array is. %d", max);
}
```

Que-7

```c
// Write a program to find the minimum element in a 2D array.
#include <stdio.h>
void main(){
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("a[%d][%d]= ?\n",i,j);
            scanf("%d", &a[i][j]);
        }
    }
```

```
    printf("\n");
    int min = a[0][0];
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            if (a[i][j]<min)
            min = a[i][j];
        }
    }
    printf("The minimum element of the array is. %d", min);

}
```

Que-8

```
// Write a program in C for a 2D array of size 3X4 and print the matrix.
#include <stdio.h>
void main(){
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("a%d%d= ?\n",i,j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0 ; j < 4; j++)
        {
            printf("%d ", a[i][j]);
        }
        printf("\n");
    }

}
```

24-Sept-2022

Que-1

```c
// Write a program to read a number from user and check how many times that
element occured in 1D array of 10 elements.
#include <stdio.h>
void main(){
    int array[10], i, k;
    printf("Enter array elements\n");
    for (i = 0; i < 10; i++){
        scanf("%d", &array[i]);
    }
    printf("\n");
    printf("Enter the element you want to search\n");
    scanf("%d", &k);
    int counter=0;
    for (i = 0; i < 10; i++){
        if (array[i]==k)
        counter++;
    }
    printf("Entered element %d occured for %d times", k, counter);

}
```

Que-2

```c
// Write a program to read a number from user and check how many times that
element occured in 2D array.
#include <stdio.h>
void main()
{
    int a[3][4];
    printf("Enter the array elements.\n");
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            printf("a[%d][%d]= ?\n", i, j);
            scanf("%d", &a[i][j]);
        }
    }
    int k, counter = 0;
    printf("\nEnter the element you want to search.\n");
    scanf("%d", &k);
```

```
    for (int i = 0; i < 3; i++)
    {
        for (int j = 0; j < 4; j++)
        {
            if (a[i][j] == k)
                counter++;
        }
    }
    printf("Entered element %d occured for %d times.", k, counter);
}
```

Que-3

```
// Write a program to print the fibonacci series upto a given number.
#include <stdio.h>
void main()
{
    int n;
    printf("Enter a number upto which you wish to print the fibonacci series\n");
    scanf("%d", &n);
    int a = 0, b = 1, i = 1, j, k;
    k = 3;
    printf("%d %d %d ", a, b, i);
    // 1 1 2 3 5 8 13
    while (k < n)
    {
        j = b + i;
        b = i;
        i = j;
        printf("%d ", j);
        k++;
    }
}
```

Que-4

```
// Write a program to multiply two matrices.
#include <stdio.h>
void main()
{
    int a[2][2];
    int b[2][2];
    int mult[2][2];
    printf("Enter the elements of the first matrix\n");
```

```c
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 2; j++)
        {
            printf("a[%d][%d]\n", i, j);
            scanf("%d", &a[i][j]);
        }
    }

    printf("Enter the elements of the second matrix\n");
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 2; j++)
        {
            printf("b[%d][%d]\n", i, j);
            scanf("%d", &b[i][j]);
        }
    }
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 2; j++)
        {
            mult[i][j] = 0;
            for (int z = 0; z < 2; z++)
            {
                mult[i][j] += a[i][z] * b[z][j];
            }
        }
    }
    printf("\nThe multiplication matrix is\n");
    for (int i = 0; i < 2; i++)
    {

        for (int j = 0; j < 2; j++)
        {
            printf("%d ",mult[i][j]);
        }
        printf("\n");
    }
}
```

Que-5

```c
/* Print the pettern
If input = 6, output should be
*****6
****656
***654654
**65436543
*6543265432
654321654321
*/

#include <stdio.h>
void main()
{
    int n;
    printf("Enter the number of lines you want to print\n");
    scanf("%d", &n);
    for (int i = n; i >= 1; i--)
    {
        printf("\n");
        for (int j = 1; j <= i - 1; j++)
        {
            printf("* ");
        }

        for (int k = n; k >= i; k--)
        {
            printf("%d ", k);
        }

        for (int l = i; l < n;)
        {
            printf("%d ", ++l);
        }
    }
}
```

Que-6

```c
/* Print the pettern
If input = 6, output should be
12345654321
*123454321
**1234321
***12321
****121
*****1
*/
#include <stdio.h>
void main()
{
    int n, i, j;
    printf("How many lines you want to print\n");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        for (j = n; j > n - i + 1; j--)
        {
            printf("*");
        }
        for (j = 1; j <= n - i; j++)
        {
            printf("%d",j);
        }
        for (j=n-i+1;j>=1;j--)
        {
            printf("%d",j);
        }

        printf("\n");
    }
}
```

Que-7

```c
// Write a program to check if the given number is strong or not.
#include <stdio.h>
void main(){
    int num,a,b,c, sum = 0, fact;
    printf("Enter your number\n");
    scanf("%d", &num);
```

```
    int z = num;
    while (z>0){
        a = z%10;
        fact = 1;
        while(a>0){
            fact*=a;
            a--;
        }
        sum+=fact;
        z/=10;
    }
    if(sum == num)
    printf("The entered number %d is a strong number.", num);
    else
    printf("The entered number %d is not a strong number.", num);
}
```