BUDDHA SERIES

(Unit Wise Solved Question & Answers)

Course – B.Tech (ASH)

College – Buddha Institute of Technology

(AKTU CODE-525)

Department: Applied Science and Humanities

Subject: Programming for Problem Solving (BCS-101/201)

Faculty Name: Shyam Mohan Singh

Unit – 3

Long Answer type question

1) Write a program to find the Armstrong number between 100 and 1000.

(B.TECH-(SEM I) 2022-23, (SEM II)-2022-23)

Answer:-

```
#include<stdio.h>
 int  main()
 {
 ints,n,i,p,num;
 clrscr();
 for(i=100;i<=1000;i++)
 {
 p=0;
 num=i;
 while(num>0)
 {
 s=num%10;
 p=p+(s*s*s);
 num=num/10;
 }
 if(p==i)
 printf("\t%d",p);
 }
 return 0;
 }
```

2. Write a program to find the sum of even and sum of odd from 100 to 500 using for loop.

(B.TECH-(SEM I) 2019-20)

Answer:-

```
#include<stdio.h>
 int main()
 {
   inti,sumeve=0,sumodd=0;
   for(i=100 ; i<=500 ;i++)
   {
```

```
if(i%2==0)
{
sumeve=(sumeve+i);
}
else
{
sumodd=(sumodd+i);
}
}
printf("sum of even no. are %d",sumeve);
printf("sum of odd no. are %d",sumodd);
return 0;
}
```

3) Write a program to generate the following series:

```
    1
   121
  12321
 1234321
123454321
```

.

(B.TECH-(SEM II) 2022-23)

Answer:-

```
#include<stdio.h>
 int main()
{
   int  i , j;
   for(i=1;i<=5;i++)
   {
   for(j=4;j>=i; j--)
   {
   printf(" ");
   }
   for(j=1;j<=i;j++)
   {
   printf("%d",j);
   }
   for(j=i-1;j>=1;j--)
   {
   printf("%d",j);
   }
   printf("\n");
```

```
        }
    return 0;
}
```

4) Write a program to find the transpose of a given matrix?

(B.TECH-(SEM II) 2018-19)

Answer:-

```
#include<stdio.h>
int main()
{
        int a[10][10], i , j , row , col ,b[10][10];
        clrscr();
        printf("enter the order of matrix\n");
        scanf("%d%d",&row,&col);
        printf("\n\t enter matrix  :\n ");
        for(i=0; i<row; i++)
        {
        for(j=0; j<col; j++)
        {
        scanf("%d",&a[i][j]);  //read 3*3 array
        }
        }
        for(i=0; i<col; i++)
        {
        for(j=0; j<row; j++)
        {
        b[i][j]=a[j][i];
        }
        }
        printf("\n transpose matrix is:\n");
        for(i=0; i<col; i++)
        {
        for(j=0; j<row; j++)
        {
        printf("%d\t ",b[i][j]);
        }
        printf("\n");
        }
  return 0;
}
```

5) **Write a program to find the sum of diagonal elements in the given square matrix?**

(B.TECH-(SEM II) 2021-22)

Answer:-

```
#include<stdio.h>
 int main()
 {
    int a[10][10], i, j,row , col,sum=0;
    clrscr();
    printf("enter the order of matrix\n");
    scanf("%d%d",&row,&col);
    printf("\n\t enter matrix  :\n ");
    for(i=0; i<row; i++)
    {
    for(j=0; j<col; j++)
    {
    scanf("%d",&a[i][j]);  //read 3*3 array
    }
    }
    for(i=0; i<row; i++)
    {
    for(j=0; j<col; j++)
    {
    if(i==j)
    sum=sum + a[i][j];
    }
    }
    printf("sum of diagonal elements is : %d", sum);
   return 0;
}
```

6) **Write a C program for multiplication of two matrices?**

(B.TECH-(SEM I) 2022-23)

Answer:-

```
#include <stdio.h>

 int main() {

     int  a[10][10],i,j,k, b[10][10], p[10][10],row1,col1,row2,col2;
    printf("Enter number of rows and columns of first matrix (less than 10)\n");
    scanf("%d%d",&row1,&col1);
```

```
printf("\nEnter number of rows and columns of second matrix (less than 10)\n");
scanf("%d%d",&row2,&col2);
if(col1==row2)
   {
        printf("Enter elements of First matrix \n");
        for(i=0;i<row1;i++)
          {
        for(j=0;j<col1;j++)
        {
          scanf("%d",&a[i][j]);
          }
          }
        printf("\nEnter elements of second  matrix \n");
        for(i=0;i<row2;i++)
         {
        for(j=0;j<col2;j++)
        {
          scanf("%d",&b[i][j]);
          }
          }
        for(i=0;i<row1;i++)
        {
        for(j=0;j<col2;j++)
           {
                p[i][j]=0;
                 for(k=0;k<col1;k++)
                 {
                p[i][j]= p[i][j]  +  a[i][k] * b[k][j];
                 }
            }
         }
         printf("Multiplication of the Matrices:\n");
        for(i=0;i<row1;i++)
        {
        for(j=0;j<col2;j++)
              {
                Printf("%d\t ",p[i][j]);
               }
                Printf("\n");
          }
       }
else
printf("Matrix multiplication cannot be done");

return 0;
  }
```

7) Write a C program for Addition of two matrices .

(B.TECH-(SEM II) 2020-21)

Answer:-

```
int main()
{
   int a[10][10],b[10][10],c[10][10],i,j,row1,col1,row2,col2;
   clrscr();
   printf("enter the order of matrix a\n");
    scanf("%d%d",&row1,&col1);
   printf("\n enter the order of matrix  b\n");
   scanf("%d%d",&row2,&col2);
   if( (row1==row2) &&(col1==col2))
   {
    printf("enter the values in matrix  a");
   for(i=0;i<row1;i++)
   {
   for(j=0;j<col1;j++)
   {
   scanf("%d",&a[i][j]);
   }
   }
   printf("enter values in matrix  b");
   for(i=0;i<row2;i++)
   {
   for(j=0;j<col2;j++)
   {
   scanf("%d",&b[i][j]);
   }
   }
   printf("addition of two matrix is \n");
   for(i=0;i<row1;i++)
   {
   for(j=0;j<col1;j++)
   {
   c[i][j]=a[i][j]+b[i][j];
   }
   }
   for(i=0;i<row1;i++)
   {
   for(j=0;j<col2;j++)
```

```
                {
                printf("\t%d",c[i][j]) ;
                }
                printf("\n");
                }
                }
                else
               printf(" addition is not possible ");
              return 0;
}
```

8) Write a C program to find the smallest and largest element in an array.

(B.TECH-(SEM I) 2019-20)

Answer:-

```
#include <stdio.h>


int main() {

                inti,largest,smallest,a[100],n;
                clrscr();
                printf("enter the number of element in array");
                scanf("%d",&n);
                print("\nenter the element in array\n");
                for(i=0;i<n;i++)
                scanf("%d",&a[i]);
                largest=a[0];
                smallest=a[0];
                for(i=1;i<n;i++)
                {
                if(largest<a[i])
                largest=a[i];
                if(smallest>a[i])
                smallest=a[i];
                }
                printf("smallest=%d \n largest=%d",smallest,largest);
                 return 0;
}
```

9) Define a structure named employee. The structure should have the following element in it.

Employee Id(int type) , Name (characterarray) , Age (int) , Salary (float)

Program:

```
        Struct    employee
```

```
{
int     id;
char    name[20];
int      age;
float    salary;
}  emp1;

void main()
{
printf(“enter the  id \n”);
scanf(“%d”,&emp1.id);
printf(“enter the  name \n”);
scanf(“%s”,emp1.name);
printf(“enter the  age \n”);
scanf(“%d”,&emp1.age);
printf(“enter the  salary \n”);
scanf(“%f”,&emp1.salary);
getch();
}
```

10) Declare a structure which contains the following members (roll no, name, father’s name, age, marks) and write a program in C to list all students name which contain more than 75 marks.

(B.TECH-(SEM I) 2019-20)

```
struct   student
{
int     rollno ,  age;
char   name[50],  fname[50];
float    marks;
}  s[100];

void main()
{
int i , n;
printf(“enter the no of students :”);
scanf(“%d”,&n);
printf("enter the records of studentrollno , age ,name ,fname ,marks :");
for(i=0 ; i<n ; i++)
{
scanf("%d%d%s%s%f",&s[i].rollno,&s[i].age,s[i].name,s[i].fname,&s[i].marks);
}
printf(“record of the student are :”);
for(i=0;i<n;i++)
```

```
{
printf("%d%d%s%s%f",&s[i].rollno,&s[i].age,s[i].name,s[i].fname,&s[i].marks);
}
printf(“name of those student who scored more than 75 marks:”);
for(i=0;i<n;i++)
{
if(s[i].marks>75)
printf("%s",s[i].name);
}
getch();
}
```