

Page – 28(1.16)

```
#include <stdio.h>

int main()
{
    printf("Hello World!!");

    return 0;
}
```

Page – 33(2.1)

```
#include <stdio.h>

int main()
{
    int a = 50, b = 60, sum;

    sum = a + b;

    printf("Sum is = %d\n", sum);

    return 0;
}
```

Page – 36(2.4)

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

```
int main()
{
    int x, y;

    x = 1;
    y = x;
    x = 2;

    printf("%d\n", y);

    return 0;
}
```

Page – 38(2.7)

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

```
int main()
```

```
{
```

```
    double a, b, x;
```

```
    a = 50.25;
```

```
    b = 60;
```

```
    x = (int)a + b;
```

```
    /*type cast kory double type hoty integer a neya hoyecy*/
```

```
    printf("%lf\n", x);
```

```
    return 0;
```

```
}
```

```
/*atar output hoby 110.000000*/
```

Page – 41(2.9)

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

```
int main()
{
    double a, b, x;

    a = 50.25;
    b = 60;

    x = a + b;

    printf("Sum is = %lf\n", x);
    printf("Sum is = %.2lf\n", x);

    return 0;
}
```

Page – 42(2.10)

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

```
int main()
{
    int a, b, sum;
    printf("Enter the value of a = ");
    scanf("%d", &a);
    printf("Enter the value of b = ");
    scanf("%d", &b);

    sum = a + b;

    printf("The sum is = %d\n", sum);

    return 0;
}
```

Page – 44(2.12)

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

```
int main()
{
    char ch;
    printf("Enter the first letter of your name = ");
    scanf("%c", &ch);

    printf("The first letter is = %c\n", ch);

    return 0;
}
```

Page – 44(2.13)

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

```
int main()
{
    char ch;
    printf("Enter the first letter of your name = ");
    //scanf("%c", &ch);
    ch = getchar();

    printf("The first letter is = %c\n", ch);

    return 0;
}
```

Page – 45(2.14)

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

```
int main()
{
    double num1, num2;

    printf("Enter the first number = ");
    scanf("%lf", &num1);
    printf("Enter the second number = ");
    scanf("%lf", &num2);

    printf("%lf + %lf = %lf\n", num1, num2, num1 + num2);
    printf("%lf - %lf = %lf\n", num1, num2, num1 - num2);
    printf("%lf * %lf = %lf\n", num1, num2, num1 * num2);
    printf("%lf / %lf = %.2lf\n", num1, num2, num1 / num2);

    return 0;
}
```


Page – 46(2.15)

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

```
int main()
{
    double num1, num2, value;
    char sign;

    printf("Enter the value of first number = ");
    scanf("%lf", &num1);
    printf("Enter the value of second number = ");
    scanf("%lf", &num2);

    value = num1 + num2;
    sign = '+';
    printf("%.2lf %c %.2lf = %.2lf\n", num1, sign, num2, value);

    value = num1 - num2;
    sign = '-';
    printf("%.2lf %c %.2lf = %.2lf\n", num1, sign, num2, value);

    value = num1 * num2;
    sign = '*';
    printf("%.2lf %c %.2lf = %.2lf\n", num1, sign, num2, value);

    value = num1 / num2;
    sign = '/';
    printf("%.2lf %c %.2lf = %.2lf\n", num1, sign, num2, value);

    return 0;
}
```

Page – 57(3.11)

//Uppercase and lowercase letter.

#include <stdio.h>

```
int main()
{
    char ch;
    printf("Please enter a character = ");
    scanf("%c", &ch);

    if (ch >= 'A' && ch <= 'Z')
    {
        printf("This is a upper case letter\n");
    }
    else if(ch >= 'a' && ch<= 'z')
    {
        printf("This is a lower case letter\n");
    }

    return 0;
}
```

Page – 58(3.13)

//vowel or consonant.

```
#include <stdio.h>

int main()
{
    char ch;
    printf("Please enter a character = ");
    scanf("%c", &ch);

    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
        ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')
    {
        printf("This is vowel\n");
    }
    else
    {
        printf("This is consonant\n");
    }

    return 0;
}
```

Page – 57(3.12)

//OR operator

```
#include <stdio.h>

int main()
{
    int n = 5;

    if (n >= 1 || n <= 10)
    {
        printf("YES\n");
    }
    else
    {
        printf("NO\n");
    }

    return 0;
}
```

//Even and Odd.

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

```
int main()
{
    int num;
    printf("Please enter a number = ");
    scanf("%d", &num);

    if (num % 2 == 0)
    {
        printf("This is a even number\n");
    }
    else
    {
        printf("This is a odd number\n");
    }

    return 0;
}
```

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

```
int main()
{
    int num;
    printf("Please enter a number = ");
    scanf("%d", &num);

    if (num > 0)
    {
        printf("The number is positive\n");
    }
    else if (num < 0)
    {
        printf("The number is negative\n");
    }
    else if (num == 0)
    {
        printf("The number is zero\n");
    }

    return 0;
}
```

Page – 61(4.2)

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

```
int main()
{
    int i;

    for (i = 1; i <= 10; i++)
    {
        printf("%d\n", i);
    }

    return 0;
}
```

Page – 63(4.4)

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

```
int main()
{
    int i;

    for (i = 1; i <= 100; i++)
    {
        printf("%d\n", i);
        if (i >= 10)
        {
            break;
        }
    }

    return 0;
}
```

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

```
int main()
{
    int i;

    for (i = 1; i <= 10; i++)
    {
        if (i % 2 == 0)
        {
            continue;
        }
        printf("%d\n", i);
    }

    return 0;
}
```


Page – 65(4.7)

//Basic Multiple Table(নামতা তৈরি করা)

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

```
int main()
{
    int i, n = 5;

    for (i = 1; i <= 10; i++)
    {
        printf("%d X %d = %d\n", n, i, n * i);
    }

    return 0;
}
```

Page – 67(4.9)

//Basic Multiple Table(যোগের মাধ্যমে নামতা তৈরি করা)

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

```
int main()
{
    int i, sum = 0, n = 5;

    for (i = 1; i <= 10; i++)
    {
        sum = sum + n;
        printf("%d X %d = %d\n", n, i, sum);
    }

    return 0;
}
```

//১-২০ পর্যন্ত সবগুলো সংখ্যার নামতা

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

```
int main()
{
    int i, j;

    for (i = 1; i <= 20; i++)
    {
        for (j = 1; j <= 10; j++)
        {
            printf("%d X %d = %d\n", i, j, i * j);
        }
        printf("\n");
    }

    return 0;
}
```

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

```
int main()
{
    int n, m, i, j;
    printf("Enter the value of n = ");
    scanf("%d", &n);

    for(i = 0; i<n; i++)
    {
        printf("Enter the value of m = ");
        scanf("%d", &m);
        for (j = 10; j <= m; j++)
        {
            if (j % 11 == 0)
            {
                continue;
            }
            printf("%d\n", j);
        }
    }

    return 0;
}
```

Page – 74(4.15)

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

```
int main()
{
    int a, b, c;

    for (a = 1; a <= 3; a++)
    {
        for (b = 1; b <= 3; b++)
        {
            for (c = 1; c <= 3; c++)
            {
                if (a != b && a != c && b != c)
                {
                    printf("%d %d %d\n", a, b, c);
                }
            }
        }
    }

    return 0;
}
```

Page - 85(5.9)

//Determine gcd and lcm.

#include <stdio.h>

```
int main()
{
    int num1, num2, n1, n2, rem, lcm, gcd;

    printf("Please enter two number = ");
    scanf("%d %d", &num1, &num2);

    n1 = num1;
    n2 = num2;

    while (n2 != 0)
    {
        rem = n1 % n2;
        n1 = n2;
        n2 = rem;
    }
    gcd = n1;
    lcm = (num1 * num2) / gcd;

    printf("GCD = %d\n", gcd);
    printf("LCM = %d\n", lcm);

    return 0;
}
```

Page – 82(5.7)

//Celsius to Farenheit.

#include <stdio.h>

```
int main()
{
    double f, c;
    printf("Enter celsius temperature = ");
    scanf("%lf", &c);

    f = (c * 1.8) + 32;

    printf("The farenheit temperature is = %.2lf\n", f);

    return 0;
}
```

//Farenheit to Celcius.

#include <stdio.h>

```
int main()
{
    double f, c;
    printf("Enter farenheit temperature = ");
    scanf("%lf", &f);

    c = (f - 32) / 1.8;

    printf("The celcius temperature is = %.2lf\n", c);

    return 0;
}
```

Page – 81(5.6)

//1+2+3+-----+n.

#include <stdio.h>

```
int main()
{
    int n, sum = 0, i;
    printf("Enter the last value of the series = ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++)
    {
        sum = sum + i;
    }
    printf("Summation is = %d\n", sum);

    return 0;
}
```

//1+3+5+-----+n.

#include <stdio.h>

```
int main()
{
    int n, sum = 0, i;
    printf("Enter the last value of the series = ");
    scanf("%d", &n);

    for (i = 1; i <= n; i = i+2)
    {
        sum = sum + i;
    }
    printf("Summation is = %d\n", sum);

    return 0;
}
```

Page – 80(4)

```
#include <stdio.h>

int main()
{
    int t, v;
    printf("Enter the value of t and v = ");
    scanf("%d %d", &t, &v);

    printf("The distance after 2t second is = %d\n", 2 * t * v);

    return 0;
}
```


Page – 79(5.4)

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

```
int main()
```

```
{
```

```
    double loanamount, interestrate, years, totalamount,  
    monthlyamount;
```

```
    printf("Enter the loan amount = ");
```

```
    scanf("%lf", &loanamount);
```

```
    printf("Enter the interest rate = ");
```

```
    scanf("%lf", &interestrate);
```

```
    printf("Enter total years = ");
```

```
    scanf("%lf", &years);
```

```
    totalamount = loanamount + loanamount * interestrate / 100;
```

```
    monthlyamount = totalamount / (years * 12);
```

```
    printf("Total amount = %.2lf\n", totalamount);
```

```
    printf("Monthly amount = %.2lf\n", monthlyamount);
```

```
    return 0;
```

```
}
```

Page – 77(5.2)

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

```
int main()
{
    double a1, a2, b1, b2, c1, c2, x, y;
    printf("Enter a1 = ");
    scanf("%d", &a1);
    printf("Enter a2 = ");
    scanf("%d", &a2);
    printf("Enter b1 = ");
    scanf("%d", &b1);
    printf("Enter b2 = ");
    scanf("%d", &b2);
    printf("Enter c1 = ");
    scanf("%d", &c1);
    printf("Enter c2 = ");
    scanf("%d", &c2);

    x = (b2 * c1 - b1 * c2) / (a1 * b2 - a2 * b1);
    y = (a1 * c2 - a2 * c1) / (a1 * b2 - a2 * b1);

    printf("X = %.21f\n", x);
    printf("Y = %.21f\n", y);

    return 0;
}
```

Page – 78(5.3)

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

```
int main()
{
    double a1, a2, b1, b2, c1, c2, x, y, d;
    printf("Enter a1 = ");
    scanf("%d", &a1);
    printf("Enter a2 = ");
    scanf("%d", &a2);
    printf("Enter b1 = ");
    scanf("%d", &b1);
    printf("Enter b2 = ");
    scanf("%d", &b2);
    printf("Enter c1 = ");
    scanf("%d", &c1);
    printf("Enter c2 = ");
    scanf("%d", &c2);

    d = (a1 * b2 - a2 * b1);

    if ((int)d == 0)
    {
        printf("Value of x and y cannot be determined\n");
    }
    else
    {
        x = (b2 * c1 - b1 * c2) / d;
        y = (a1 * c2 - a2 * c1) / d;
    }

    printf("X = %.2lf\n", x);
    printf("Y = %.2lf\n", y);

    return 0;
}
```

Page – 76(5.1)

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

```
int main()
{
    double x, y, xplusy, xminusy;

    printf("Enter the value of x + y = ");
    scanf("%lf", &xplusy);
    printf("Enter the value of x - y = ");
    scanf("%lf", &xminusy);

    x = (xplusy + xminusy) / 2;
    y = (xplusy - xminusy) / 2;

    printf("x = %.2lf\n", x);
    printf("y = %.2lf\n", y);

    return 0;
}
```

Page – 95(6.11)

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

```
int main()
{
    int fsmarks[5] = { 80, 87, 82, 88, 89 },
        ssmarks[5] = { 88, 90, 91, 98, 99 },
        tsmarks[5] = { 89, 85, 82, 98, 91 };
    int i;
    double totalmarks[5];

    for (i = 0; i < 5; i++)
    {
        totalmarks[i] = fsmarks[i] / 4.0 + ssmarks[i] / 4.0
+ tsmarks[i] / 2.0;
    }

    for (i = 0; i < 5; i++)
    {
        printf("Roll number = %d\tMarks = %.2lf\n", i + 1,
totalmarks[i]);
    }

    return 0;
}
```

Page – 97(6.12)

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

```
int main()
{
    int totalmarks[] = { 88, 84, 81, 88, 83 };
    int i, count, marks;

    for (marks = 80; marks <= 100; marks++)
    {
        count = 0;
        for (i = 0; i < 5; i++)
        {
            if (totalmarks[i] == marks)
            {
                count++;
            }
        }
        printf("Marks = %d\tCount = %d\n", marks, count);
    }

    return 0;
}
```

Page – 99(6.14)

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

```
int main()
{
    int totalmarks[] = { 2, 3, 4, 5, 6, 7, 8, 2, 3, 7, 5 };
    int i, count, marks;

    for (marks = 0; marks <= 10; marks++)
    {
        count = 0;
        for (i = 0; i < 11; i++)
        {
            if (totalmarks[i] == marks)
            {
                count++;
            }
        }
        printf("Marks = %d\tCount = %d\n", marks, count);
    }

    return 0;
}
```

Page – 91(6.8)

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

```
int main()
{
    int num[10] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
    int i;

    for (i = 0; i < 10; i++)
    {
        printf("%dth element is = %d\n",i+1, num[i]);
    }

    return 0;
}
```

Page – 91(First line).

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

```
int main()
{
    int num[10] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
    int i;

    for (i = 9; i > 0; i--)
    {
        printf("%dth element is = %d\n",i+1, num[i]);
    }

    return 0;
}
```


Page – 105(7.3)

```
#include <stdio.h>
double add(double a, double b)
{
    double sum = a + b;
    return sum;
}
int main()
{
    double a = 2.8, b = 2.7, c;

    c = add(a, b);
    printf("The sum is = %lf\n", c);

    return 0;
}
```

Page – 107(7.5)

```
#include <stdio.h>
double add(double a, double b);
int main()
{
    double a = 2.8, b = 2.7, c;

    c = add(a, b);
    printf("The sum is = %lf\n", c);

    return 0;
}
double add(double a, double b)
{
    double sum = a + b;
    return sum;
}
```

Page – 107(7.6)

```
#include <stdio.h>
int testfunction(int x)
{
    int y = x;
    x = 2 * y;
    return (x * y);
}
int main()
{
    int x = 10, y = 20, z = 30;

    z = testfunction(x);
    printf("%d %d %d\n", x, y, z);

    return 0;
}
```

Page – 108(7.7)

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

```
double pi = 3.14;
```

```
void myfunction()
```

```
{
```

```
    pi = 3.1416;
```

```
}
```

```
int main()
```

```
{
```

```
    printf("%lf\n", pi);
```

```
    myfunction();
```

```
    printf("%lf\n", pi);
```

```
    return 0;
```

```
}
```

Page – 111(7.9)

```
#include <stdio.h>
void testfunction(int num[])
{
    num[0] = 100;
}
int main()
{
    int num[] = { 1, 2, 3, 4, 5 };
    printf("%d\n", num[0]);
    testfunction(num);
    printf("%d\n", num[0]);

    return 0;
}
```

//ফাংশনের মধ্যে কোনো অ্যারে পাস করলে ওই অ্যারের আলাদা কোনো কপি তৈরি হয় না।

Page – 110(Maximun Number).

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

```
int main()
{
    int num[] = { 2, 4, 5, 6, 1, 8, 9 };
    int i, position;
    int max = num[0];

    for (i = 1; i < 7; i++)
    {
        if (num[i] > max)
        {
            max = num[i];
            position = i;
        }
    }
    printf("The maximum number is = %d and the position is %d\n", max, position);

    return 0;
}
```

Page – 110(Maximun number from the user)

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

```
int main()
{
    int n, i, num[100];
    printf("How many numbers = ");
    scanf("%d", &n);

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

    int max = num[0];

    for (i = 1; i < n; i++)
    {
        if (num[i] > max)
        {
            max = num[i];
        }
    }
    printf("The maximum number is = %d\n", max);

    return 0;
}
```

Page – 110(7.8)

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

```
int findmax(int num[], int n);
```

```
int main()
```

```
{
```

```
    int num[] = { 2, 4, 5, 6, 1, 8, 9 };
```

```
    int n = 7;
```

```
    int max = findmax(num, n);
```

```
    printf("The maximum number is = %d\n", max);
```

```
    return 0;
```

```
}
```

```
int findmax(int num[], int n)
```

```
{
```

```
    int i;
```

```
    int max = num[0];
```

```
    for (i = 1; i < n; i++)
```

```
    {
```

```
        if (num[i] > max)
```

```
        {
```

```
            max = num[i];
```

```
        }
```

```
    }
```

```
    return max;
```

```
}
```


Page – 115(8.1)

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

```
int main()
{
    int num[] = { 1,4,6,8,9,11,14,15,20,25,33,83,87,97,99,100 };
    int value = 97;
    int lowindex = 0;
    int highindex = 15;
    int midindex;

    while (lowindex <= highindex)
    {
        midindex = (lowindex + highindex) / 2;
        if (value == num[midindex])
        {
            break;
        }
        else if (value > num[midindex])
        {
            lowindex = midindex + 1;
        }
        else
        {
            highindex = midindex - 1;
        }
    }
    if (lowindex > highindex)
    {
        printf("%d is not in the number\n", value);
    }
    else
    {
        printf("%d is found in the number.
It is the %dth element of the number\n", value, midindex);
    }

    return 0;
}
```

Page – 116(Linear search)

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

```
int main()
{
    int num[] = { 4, 5, 6, 8, 9, 11, 12 };
    int value, position = 0, i;
    printf("Enter the value you want to search = ");
    scanf("%d", &value);

    for (i = 0; i < 7; i++)
    {
        if (value == num[i])
        {
            position = position + i;
            break;
        }
    }
    if (position == -1)
    {
        printf("Value is not found\n");
    }
    else
    {
        printf("Value is found at position %d", position);
    }

    return 0;
}
```

```
//position = -1
```

```
//position = i + 1 (এভাবে করলেও হবে)
```

Page – 120(9.4)

//Lower to Upper.

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

```
int main()
{
    char country[] = "Bangladesh";
    int i, length = 10;

    printf("%s\n", country);

    for (i = 0; i < 10; i++)
    {
        if (country[i] >= 'a' && country[i] <= 'z')
        {
            country[i] = 'A' + (country[i] - 'a');
        }
    }
    printf("%s\n", country);

    return 0;
}
```

Page – 120(9.4)

//Upper to Lower

#include <stdio.h>

```
int main()
{
    char country[] = "Bangladesh";
    int i, length = 10;

    printf("%s\n", country);

    for (i = 0; i < 10; i++)
    {
        if (country[i] >= 'A' && country[i] <= 'Z')
        {
            country[i] = 'a' + (country[i] - 'A');
        }
    }
    printf("%s\n", country);

    return 0;
}
```

Page – 124(9.7)

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

```
int main()
{
    char s1[] = "Bangla", s2[] = "desh", s3[12];
    int i, j, length1 = 6, length2 = 4;
    //i for s1 and j for s3.

    for (i = 0, j = 0; i < length1; i++, j++)
    {
        s3[j] = s1[i];
    }
    for (i = 0; i < length2; i++, j++)
    {
        s3[j] = s2[i];
        //s3 er soptom upadan hoby s2 er protom upadan.
    }
    s3[j] = '\0';
    printf("%s\n", s3);

    return 0;
}
```

Page – 131(9.9)

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

int main()
{
    char s[100], ch;
    int i, length, wordstarted = 0;

    gets(s);
    length = strlen(s);

    for (i = 0; i < length; i++)
    {
        if (s[i] >= 'a' && s[i] <= 'z')
        {
            if (wordstarted == 0)
            {
                wordstarted = 1;
                ch = 'A' + s[i] - 'a';
            }
            else
            {
                printf("%c", s[i]);
            }
        }
        else if ((s[i] >= 'A' && s[i] <= 'Z') || (s[i] >= '0' && s[i] <= '9'))
        {
            if (wordstarted == 0)
            {
                wordstarted = 1;
            }
            printf("%c", s[i]);
        }
        else
        {
            if (wordstarted == 1)
            {
                wordstarted = 0;
                printf("\n");
            }
        }
    }

    return 0;
}
```

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

```
int main()
{
    int num, i, count = 0;

    printf("Please enter a number = ");
    scanf("%d", &num);

    for (i = 2; i < num; i++)
    {
        if (num % 2 == 0)
        {
            count++;
            break;
        }
    }

    if (count == 0)
    {
        printf("This is a prime number\n");
    }
    else
    {
        printf("This is not a prime number\n");
    }

    return 0;
}
```

Page – 143 (11.1)

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

```
int main()
{
    int marks[4][10] =
    {
        {80, 70, 92, 78, 58, 83, 85, 66, 99, 81}, //row 0
        {75, 67, 55, 98, 91, 84, 79, 61, 90, 89}, //row 1
        {98, 67, 75, 89, 81, 83, 80, 90, 88, 77}, //row 2
        {0,0,0,0,0,0,0,0,0,0} //row 3
    };

    int j;
    for (j = 0; j < 10; j++)
    {
        marks[3][j] = marks[0][j] / 4.0 + marks[1][j] / 4.0
+ marks[2][j] / 2.0;

        printf("Roll number = %d          Total marks =
%d\n", j+1, marks[3][j]);
    }

    return 0;
}
```


Page – 143 (11.1)

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

```
int main()
{
    int marks[4][10];
    int i, j;

    //printf("Enter marks \n");
    for (i = 0; i < 4; i++)
    {
        for (j = 0; j < 10; j++)
        {
            scanf("%d", &marks[i][j]);
        }
    }

    for (j = 0; j < 10; j++)
    {
        marks[3][j] = marks[0][j] / 4.0 + marks[1][j]
/ 4.0 + marks[2][j] / 2.0;

        printf("Roll number = %d      Total marks =
%d\n", j + 1, marks[3][j]);
    }

    return 0;
}
```

Page – 144 (11.2)

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

```
int main()
{
    int namta[10][10];
    int i, j;

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            namta[i][j] = (i + 1) * (i + 1);
        }
    }

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            printf("%d X %d = %d\n", i + 1, j + 1,
namta[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

Page – 145 (11.3)

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

```
int main()
{
    char saarc[7][100] = { "Bangladesh", "India",
    "Japan", "Korea", "Nepal", "Ugands", "Canada" };
    int i;

    for (i = 0; i < 7; i++)
    {
        printf("%s\n", saarc[i]);
    }

    return 0;
}
```

Page – 146 (11.4)

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

```
#include <string.h>
```

```
int main()
```

```
{
```

```
    char saarc[7][100] = { "Bangladesh", "India",  
"Japan", "Korea", "Nepal", "Ugands", "Canada" };
```

```
    int i, j, length;
```

```
    for (i = 0; i < 7; i++)
```

```
    {
```

```
        length = strlen(saarc[i]);
```

```
        for (j = 0; j < length; j++)
```

```
        {
```

```
            printf("%c ", saarc[i][j]);
```

```
        }
```

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

```
    }
```

```
    return 0;
```

```
}
```

Page – 146 (11.5)

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

int main()
{
    char saarc[7][100] = { "Bangladesh", "India",
    "Japan", "Korea", "Nepal", "Ugands", "Canada" };
    int i, j, length;

    for (i = 0; i < 7; i++)
    {
        length = strlen(saarc[i]);

        for (j = 0; j < length; j++)
        {
            printf("(%d, %d) = %c\n", i, j,
saarc[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

Page – 147(Sum of Row)

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

```
int main()
{
    int num[5][5] =
    {
        {6, 4, 7, 8, 9},
        {3, 7, 1, 9, 9},
        {8, 6, 4, 2, 7},
        {2, 4, 2, 5, 9},
        {4, 1, 6, 7, 3}
    };
    int i, j, sum =0;

    for (i = 0; i < 5; i++)
    {
        for (j = 0; j < 5; j++)
        {
            sum = sum + num[i][j];
        }
        printf("Sum of row %d: %d\n", i + 1, sum);
        sum = 0;
    }

    return 0;
}
```

Page – 148 (Sum of Column)

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

```
int main()
{
    int num[5][5] =
    {
        {6, 4, 7, 8, 9},
        {3, 7, 1, 9, 9},
        {8, 6, 4, 2, 7},
        {2, 4, 2, 5, 9},
        {4, 1, 6, 7, 3}
    };
    int i, j, sum =0;

    for (j = 0; j < 5; j++)
    {
        for (i = 0; i < 5; i++)
        {
            sum = sum + num[i][j];
        }
        printf("Sum of column %d: %d\n", j + 1, sum);
        sum = 0;
    }

    return 0;
}
```

Page – 149(11.6)

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

```
int main()
{
    int ara1[5][5] =
    {
        {1, 2, 3, 4, 5},
        {10, 20, 30, 40, 50},
        {100, 200, 300, 400, 500},
        {1000, 2000, 3000, 4000, 5000},
        {10000, 20000, 30000, 40000, 50000}
    };
    int ara2[5][5];
    int i, j;

    printf("The element of first array is = \n");
    for (i = 0; i < 5; i++)
    {
        for (j = 0; j < 5; j++)
        {
            printf("%d  ", ara1[i][j]);
        }
        printf("\n");
    }

    for (i = 0; i < 5; i++)
    {
        for (j = 0; j < 5; j++)
        {
            ara2[i][j] = ara1[j][i];
        }
    }
}
```



```
printf("\n");

printf("The element of second array is = \n");
for (i = 0; i < 5; i++)
{
    for (j = 0; j < 5; j++)
    {
        printf("%d  ", ara2[i][j]);
    }
    printf("\n");
}

return 0;
}
```

Page – 144(11.2)

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

```
int main()
{
    int namta[10][10];
    int i, j;

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            namta[i][j] = (i + 1) * (j + 1);
        }
    }

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            printf("%d X %d = %d\n", (i + 1), (j +
1), namta[i][j]);
        }
        printf("\n");
    }

    getch();
}
```

Page – 154(12.1) (বাইনারি → ডেসিমাল)

```
//Binary to Decimal.
#include <stdio.h>
#include <string.h>
#include <math.h>

int main()
{
    char binary[65];
    int length;
    int position;
    int decimal = 0;
    int i;

    printf("Enter the binary number = ");
    scanf("%s", &binary);

    length = strlen(binary);
    position = length - 1;

    for (i = 0; i < length; i++)
    {
        decimal = decimal + (binary[i] - '0') * pow(2, position);
        position--;
    }

    printf("Decimal value is = %d\n", decimal);

    return 0;
}
```

```
//Decimal to Binary.
```

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

```
int main()
```

```
{
```

```
    int decimalnumber;
```

```
    int binarynumber = 0;
```

```
    int rem, temp = 1;
```

```
    printf("Enter a Decimal Number: ");
```

```
    scanf("%d", &decimalnumber);
```

```
    while (decimalnumber != 0)
```

```
    {
```

```
        rem = decimalnumber % 2;
```

```
        decimalnumber = decimalnumber / 2;
```

```
        binarynumber = binarynumber + rem * temp;
```

```
        temp = temp * 10;
```

```
    }
```

```
    printf("The Binary Number is: %d", binarynumber);
```

```
    return 0;
```

```
}
```

Page – 159(Factorial)

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

```
int main()
{
    int num, i, factorial = 1;
    printf("Enter any positive number = ");
    scanf("%d", &num);

    for (i = 1; i <= num; i++)
    {
        factorial = factorial * i;
    }
    printf("The factorial of %d is = %d\n", num, factorial);

    return 0;
}
```

Page – 160(Palindrome number/প্যালিনড্রোম নাম্বার).

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

```
int main()
{
    int num, rem, temp, sum = 0;
    printf("Enter any number = ");
    scanf("%d", &num);

    temp = num;

    while (temp != 0)
    {
        rem = temp % 10;
        temp = temp / 10;
        sum = sum * 10 + rem;
    }
    if (sum == num)
    {
        printf("This is a palindrome number\n");
    }
    else
    {
        printf("This is not a palindrome number\n");
    }
    return 0;
}
```

Page – 163(Ascending and Descending order)

```
#include <stdio.h>

int main()
{
    int num1[] = { 5, 7, 3, 2, 9 };
    int num2[5];
    int i, j, minimum, miniposition;
    //i for num1 and j for num2.

    for (j = 0; j < 5; j++)
    {
        minimum = 1000;
        for (i = 0; i < 5; i++)
        {
            if (minimum > num1[i])
            {
                minimum = num1[i];
                miniposition = i;
            }
        }
        num1[miniposition] = 1000;
        num2[j] = minimum;
    }

    printf("Asecnding order\n");
    for (i = 0; i < 5; i++)
    {
        printf("%d\n", num2[i]);
    }

    printf("\n");

    printf("Descending order\n");
    for (i = 4; i >= 0; i--)
    {
        printf("%d\n", num2[i]);
    }

    return 0;
}
```

Page – 163(Ascending and Descending order from the user)

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

```
int main()
{
    int num1[5];
    int num2[5];
    int i, j, minimum, miniposition, n;
    //i for num1 and j for num2.
    printf("Enter how many numbers = ");
    scanf("%d", &n);
    for (i = 0; i < n; i++)
    {
        scanf("%d", &num1[i]);
    }

    for (j = 0; j < n; j++)
    {
        minimum = 1000;
        for (i = 0; i < n; i++)
        {
            if (minimum > num1[i])
            {
                minimum = num1[i];
                miniposition = i;
            }
        }
        num1[miniposition] = 1000;
        num2[j] = minimum;
    }
}
```



```
printf("Asecnding order\n");
for (i = 0; i < n; i++)
{
    printf("%d\n", num2[i]);
}

printf("\n");

printf("Descending order\n");
for (i = n - 1; i >= 0; i--)
{
    printf("%d\n", num2[i]);
}

return 0;
}
```

Page – 166(13.4) (Grid Traversal – গ্রিড ত্রাভার্সাল বা রোবটের ভ্রমণ)

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

```
int main()
```

```
{
```

```
    int x, y;
```

```
    char ch;
```

```
    printf("Please enter the enitial position = ");
```

```
    scanf("%d %d", &x, &y);
```

```
    while (1)
```

```
    {
```

```
        scanf("%c", &ch);
```

```
        if (ch == 's')
```

```
        {
```

```
            break;
```

```
        }
```

```
        else if (ch == 'u')
```

```
        {
```

```
            x--;
```

```
        }
```

```
        else if (ch == 'd')
```

```
        {
```

```
            x++;
```

```
        }
```

```
        else if (ch == 'r')
```

```
        {
```

```
            y++;
```

```
        }
```

```
        else if (ch == 'l')
```

```
        {
```

```
            y--;
```

```
        }
```

```
    }
```

```
    printf("Final position of the robot is = %d, %d\n", x, y);
```

```
    return 0;
```

```
}
```

Page – 169(13.6)

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

```
int main()
```

```
{
```

```
    char ch1 = 67, ch2 = 69, ch3 = 99;
```

```
    printf("%c %c %c\n", ch1, ch2, ch3);
```

```
    return 0;
```

```
}
```

Page – 170(13.7)

C program to encrypt and decrypt a string (এনক্রিপশন এন্ড ডিক্রিপশন)

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

```
int main()
{
    int i, x, n;
    char str[100];

    printf("\nPlease enter a string:\n");
    gets(str);
    n = strlen(str);

    printf("\nPlease choose following options:\n");
    printf("1 = Encrypt the string.\n");
    printf("2 = Decrypt the string.\n");
    scanf("%d", &x);

    if (x == 1)
    {
        for (i = 0; i < n; i++)
        {
            str[i] = str[i] + 1;
            //the key for encryption is 1 that is
            added to ASCII value
        }
        printf("\nEncrypted string: %s\n", str);
    }

    else if (x == 2)
    {
        for (i = 0; i < n; i++)
        {
            str[i] = str[i] - 1;
        }
    }
}
```

```
        //the key for encryption is 1 that is  
        subtracted to ASCII value
```

```
    }  
    printf("\nDecrypted string: %s\n", str);  
}  
  
else  
{  
    printf("\nError\n");  
}  
  
return 0;  
}
```