**Assignment-1**

#include <stdio.h>

void printIncrementingSquaredNumberStarPattern(int N) {

int num = 1;

for (int i = 0; i < N; i++) {

for (int j = 0; j < N; j++) {

printf("%d", num++);

if (j != N - 1)

printf("\*");

}

printf("\n");

}

}

int main() {

int N;

printf("Enter the value of N: ");

scanf("%d", &N);

if (N < 2 || N > 10) {

printf("Invalid input! N should be between 2 and 10.\n");

return 1;

}

printIncrementingSquaredNumberStarPattern(N);

return 0;

}

**Assignment-2**

#include <stdio.h>

void printNumberStarRightTrianglePattern(int N) {

int num = 1;

for (int i = 1; i <= N; i++) {

for (int j = 1; j <= i; j++) {

printf("%d", num++);

if (j != i)

printf("\*");

}

printf("\n");

}

}

int main() {

int N;

printf("Enter the value of N: ");

scanf("%d", &N);

if (N < 2 || N > 10) {

printf("Invalid input! N should be between 2 and 10.\n");

return 1;

}

printNumberStarRightTrianglePattern(N);

return 0;

}

**Assignment-3**

#include <stdio.h>

void printAlphabetTriangle(int N) {

int spaces, i, j;

char currentChar;

for (i = 1; i <= N; i++) {

// Print spaces

for (spaces = i; spaces < N; spaces++) {

printf(" "); // Two spaces for each character

}

// Print increasing characters

currentChar = 'A';

for (j = 1; j <= i; j++) {

printf("%c", currentChar++);

if (j != i)

printf(" ");

}

// Print decreasing characters

currentChar -= 2;

for (j = 1; j < i; j++) {

printf(" %c", currentChar--);

}

printf("\n");

}

}

int main() {

int N;

printf("Enter the value of N: ");

scanf("%d", &N);

if (N < 1) {

printf("Invalid input! N should be greater than 0.\n");

return 1;

}

printAlphabetTriangle(N);

return 0;

}

**Assignment-4**

#include <stdio.h>

int main() {

int N, digit, sum = 0, product = 1;

// Read the number

printf("Enter a positive integer: ");

scanf("%d", &N);

// Calculate sum and product of digits

int originalNumber = N; // Store the original number to print later

while (N > 0) {

digit = N % 10;

sum += digit;

if (digit != 0) // Exclude multiplication by 0

product \*= digit;

N /= 10;

}

// Print the sum and product

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

printf("Product = %d\n", product);

return 0;

}

**Assignment-5**

#include <stdio.h>

void printPartitions(int a, int b, int c, int d) {

printf("%d + %d + %d + %d\n", a, b, c, d);

}

int countWays(int n) {

int ways = 0;

// Iterate from 1 to n/4 since each part must be at least 1

for (int i = 1; i <= n / 4; i++) {

for (int j = i; j <= n / 3; j++) {

for (int k = j; k <= n / 2; k++) {

int l = n - (i + j + k);

if (l >= k) {

ways++;

printPartitions(i, j, k, l);

}

}

}

}

return ways;

}

int main() {

int T;

printf("Enter the number of test cases: ");

scanf("%d", &T);

while (T--) {

int n;

printf("Enter a positive integer: ");

scanf("%d", &n);

printf("Number of ways to divide %d into 4 parts: %d\n", n, countWays(n));

}

return 0;

}