## Assignment 2

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1. Write a program to check whether a number is prime or not.

**ANS:**

#include <iostream>

using namespace std;

bool isPrime(int num) {

if (num <= 1)

return false; // Numbers less than or equal to 1 are not prime

// Check for divisors from 2 to the square root of the number

for (int i = 2; i \* i <= num; ++i) {

if (num % i == 0)

return false; // Found a divisor, so it's not prime

}

return true; // If no divisors found, it's prime

}

int main() {

int number;

cout << "Enter a positive integer: " <<endl;

cin >> number;

if (isPrime(number))

cout << number << " is a prime number." << endl;

else

cout << number << " is not a prime number." << endl;

return 0;

}

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2. Write a program to generate first N prime numbers. Accept N from user.

**ANS:**

#include <iostream>

using namespace std;

bool isPrime(int num) {

if (num <= 1)

return false; // Numbers less than or equal to 1 are not prime

// Check for divisors from 2 to the square root of the number

for (int i = 2; i \* i <= num; ++i) {

if (num % i == 0)

return false; // Found a divisor, so it's not prime

}

return true; // If no divisors found, it's prime

}

int main() {

int N;

cout << "Enter the value of N: " << endl;

cin >> N;

if (N <= 0) {

cout << "Please enter a positive integer for N." << endl;

return 1;

}

cout << "The first " << N << " prime numbers are:" << endl;

int count = 0; // Number of prime numbers found

int num = 2; // Start checking from 2 (the first prime number)

while (count < N) {

if (isPrime(num)) {

cout << num << " ";

++count;

}

++num;

}

cout << endl;

return 0;

}

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3. Write a program to generate following pyramid

A

AB

ABC

..... A..............Z

ANS:

#include <iostream>

using namespace std;

int main() {

int numRows;

cout << "Enter the number of rows for the pyramid: " << endl;

cin >> numRows;

if (numRows <= 0) {

cout << "Please enter a positive integer for the number of rows." << endl;

return 1;

}

// Loop through each row

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

// Print letters from 'A' to the current row number

for (char ch = 'A'; ch <= ('A' + i - 1); ++ch) {

cout << ch;

}

cout << endl;

} return 0;

}

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4. Write a menu driven program to perform mathematical operations on two numbers.

1. Add

2. Sub

3. Mul

4. Div

5. Exit

accept the menu option and numbers form user.

#include <iostream>

using namespace std;

int main() {

int choice;

double num1, num2;

cout << "Welcome to the Math Operations Program!" << endl;

do {

cout << "\nMenu:" << endl;

cout << "1. Add" << endl;

cout << "2. Subtract" << endl;

cout << "3. Multiply" << endl;

cout << "4. Divide" << endl;

cout << "5. Exit" << endl;

cout << "Enter your choice (1-5): ";

cin >> choice;

switch (choice) {

case 1:

cout << "Enter two numbers: ";

cin >> num1 >> num2;

cout << "Sum: " << num1 + num2 << endl;

break;

case 2:

cout << "Enter two numbers: ";

cin >> num1 >> num2;

cout << "Difference: " << num1 - num2 << endl;

break;

case 3:

cout << "Enter two numbers: ";

cin >> num1 >> num2;

cout << "Product: " << num1 \* num2 << endl;

break;

case 4:

cout << "Enter two numbers: ";

cin >> num1 >> num2;

if (num2 != 0) {

cout << "Quotient: " << num1 / num2 << endl;

} else {

cout << "Error: Cannot divide by zero!" << endl;

}

break;

case 5:

cout << "Exiting. Have a great day!" << endl;

break;

default:

cout << "Invalid choice. Please select a valid option (1-5)." << endl;

}

} while (choice != 5);

return 0;

}

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5. Generate following pyramid , accept the level from the user as input

1

1 2

1 2 3

..... 1................N

where N is the level accepted as input.

**ANS:**

#include <iostream>

using namespace std;

int main() {

int N;

cout << "Enter the number of levels for the pyramid: ";

cin >> N;

// Outer loop for each level

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

// Inner loop for printing numbers from 1 to i

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

cout << j << " ";

}

cout << endl; // Move to the next line after each level

}

return 0;

}

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