

FUNDAMENTALS OF PROGRAMMING

**Assignment 5**



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**CLASS: mE-15-b**

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**TASK 1**

#include <iostream>

using namespace std;

int main() {

int num1, num2;

cout << "Enter the first number: ";

cin >> num1;

cout << "Enter the second number: ";

cin >> num2;

int a = num1, b = num2;

while (a != b) {

if (a > b) {

a -= b;

} else {

b -= a;

}

}

int hcf = a;

int lcm = (num1 \* num2) / hcf;

cout << "The HCF of " << num1 << " and " << num2 << " is " << hcf << endl;

cout << "The LCM of " << num1 << " and " << num2 << " is " << lcm << endl;

return 0;

}

**TASK 2**

#include <iostream>

using namespace std;

int main() {

int firstTerm, commonDifference, numberOfTerms;

cout << "Enter the first term: ";

cin >> firstTerm;

cout << "Enter the common difference: ";

cin >> commonDifference;

cout << "Enter the number of terms: ";

cin >> numberOfTerms;

int sum = 0;

int term = firstTerm;

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

sum += term;

term += commonDifference;

}

cout << "The sum of the arithmetic progression is: " << sum << endl;

return 0;

}

**TASK 3**

#include <iostream>

using namespace std;

int main() {

int n = 5;

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

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

cout << " ";

}

for (int j = 0; j < 2 \* i - 1; j++) {

cout << "\*";

}

cout << endl;

}

for (int i = n - 1; i >= 1; i--) {

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

cout << " ";

}

for (int j = 1; j <= 2 \* i - 1; j++) {

cout << "\*";

}

cout << endl;

}

return 0;

}

**TASK 4**

#include <iostream>

using namespace std;

int main() {

int decimalNumber;

// Input a decimal number from the user

cout << "Enter a decimal number: ";

cin >> decimalNumber;

cout << "Binary representation: ";

if (decimalNumber == 0) {

cout << "0";

} else {

int bitPosition = 1;

int leadingZeros = 0;

while (bitPosition <= decimalNumber) {

bitPosition <<= 1;

leadingZeros++;

}

while (leadingZeros > 0) {

bitPosition >>= 1;

if ((decimalNumber & bitPosition) != 0) {

cout << "1";

} else {

cout << "0";

}

leadingZeros--;

}

}

cout << endl;

return 0;

}