Part1

a) Convert the hexadecimal number 3A2 to binary, octal and decimal representations.

b) Given two numbers in different formats (one is hex number 1C01 and second is a decimal number 9010), what would be the best way to compute the sum and product to get the results in hexadecimal format? Discuss your approach first then perform the calculations and show your work. Notice that you can probably convert them to any format and then perform the computation in that format. Choose the approach that is the easiest and doesn’t require much effort.

#include <iostream>

#include <string>

#include <bitset>

#include <sstream>

#include <iomanip>

using namespace std;

// Function to convert hex to decimal

int hexToDecimal(const string& hexStr) {

int decimalValue;

stringstream ss;

ss << hex << hexStr;

ss >> decimalValue;

return decimalValue;

}

// Function to convert decimal to binary

string decimalToBinary(int decimalValue) {

bitset<16> binaryValue(decimalValue);

return binaryValue.to\_string();

}

// Function to convert decimal to octal

string decimalToOctal(int decimalValue) {

stringstream ss;

ss << oct << decimalValue;

return ss.str();

}

// Function to convert decimal to hex

string decimalToHex(int decimalValue) {

stringstream ss;

ss << hex << uppercase << decimalValue;

return ss.str();

}

int main() {

//Part 1a:Convert the hexadecimal number 3A2 to decimal, and then convert 930 to binary and octal output, respectively

string hexNumber1 = "3A2";

// Convert hex to decimal

int decimalValue = hexToDecimal(hexNumber1);

cout << "Decimal representation: " << decimalValue << endl;

// Convert decimal to binary

string binaryValue = decimalToBinary(decimalValue);

cout << "Binary representation: " << binaryValue << endl;

// Convert decimal to octal

string octalValue = decimalToOctal(decimalValue);

cout << "Octal representation: " << octalValue << endl;

//Part 1b:The hexadecimal number 1C01 is converted to decimal, and then the sum product of 7169 and 9010 is converted to hexadecimal output

string hexNumber2 = "1C01";

int decimalNumber = 9010;

// Convert hex number to decimal

int hexDecimal = hexToDecimal(hexNumber2);

// Perform sum and product

int sum = hexDecimal + decimalNumber;

int product = hexDecimal \* decimalNumber;

// Convert results back to hex

string hexSum = decimalToHex(sum);

string hexProduct = decimalToHex(product);

//3D99B32 64592690

cout << "Sum in hexadecimal: " << hexSum << endl;

cout << "Product in hexadecimal: " << hexProduct << endl;

return 0;

}