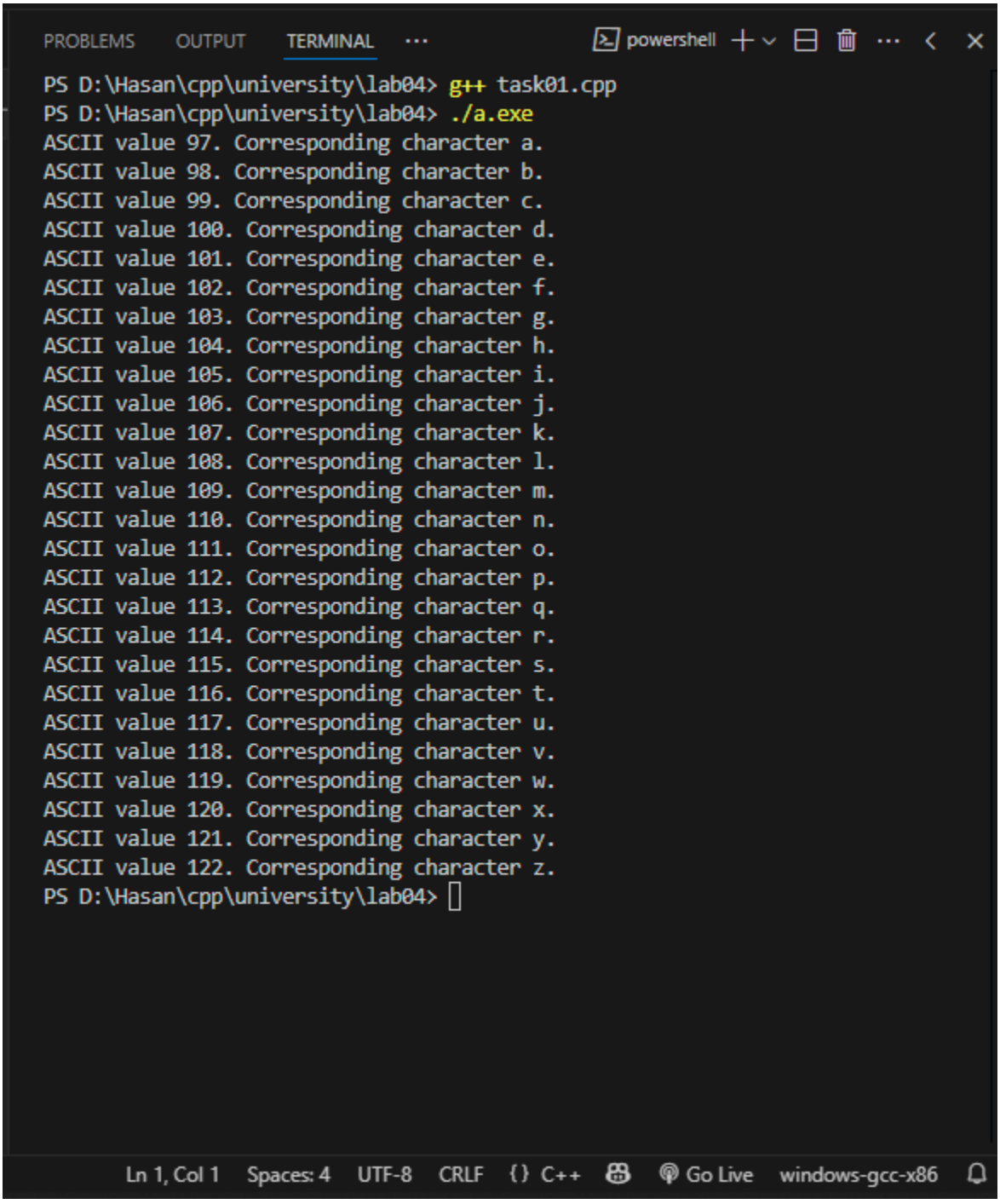
Lab # 04

Task 01:

```
/*A child is learning about the alphabet and wants to explore how letters are
represented in computers using ASCII values. To make the learning experience fun
and interactive, the
child's parent decides to create a simple C++ program using for loop that prints
ASCII
values and their equivalent characters for the uppercase and lowercase in English
alphabet.
e.g. (A to Z).*/

#include<iostream>
using namespace std;
int main(){
    for(int i = 97; i <= 122; i++){
        cout << "ASCII value "<<i<<". Corresponding character
"<<char(i)<<"."<<endl;//done it only for lowercase alphabets
    }
}
```

Output:


PROBLEMS
OUTPUT
TERMINAL
powershell
PS D:\Hasan\cpp\university\lab04> g++ task01.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
ASCII value 97. Corresponding character a.
ASCII value 98. Corresponding character b.
ASCII value 99. Corresponding character c.
ASCII value 100. Corresponding character d.
ASCII value 101. Corresponding character e.
ASCII value 102. Corresponding character f.
ASCII value 103. Corresponding character g.
ASCII value 104. Corresponding character h.
ASCII value 105. Corresponding character i.
ASCII value 106. Corresponding character j.
ASCII value 107. Corresponding character k.
ASCII value 108. Corresponding character l.
ASCII value 109. Corresponding character m.
ASCII value 110. Corresponding character n.
ASCII value 111. Corresponding character o.
ASCII value 112. Corresponding character p.
ASCII value 113. Corresponding character q.
ASCII value 114. Corresponding character r.
ASCII value 115. Corresponding character s.
ASCII value 116. Corresponding character t.
ASCII value 117. Corresponding character u.
ASCII value 118. Corresponding character v.
ASCII value 119. Corresponding character w.
ASCII value 120. Corresponding character x.
ASCII value 121. Corresponding character y.
ASCII value 122. Corresponding character z.
PS D:\Hasan\cpp\university\lab04>
Ln 1, Col 1
Spaces: 4
UTF-8
CRLF
{} C++
Go Live
windows-gcc-x86

Task 02:

```
/*Inventory Management

You work for a small retail store that needs a program to manage its inventory.
The store wants a program that allows them to enter the quantity of each item in
stock and calculates the total value of the inventory. Each item has an
associated price.
Write a C++ program by implementing loop concept on this task

Requirements

⎸   Prompt the user to enter the number of different items in stock.
⎸   For each item, prompt the user to enter the price per unit and the quantity
in stock.
⎸   Calculate and print the total value of the inventory.*/

#include<iostream>
using namespace std;

int main(){
    int total_items = 0, qt = 0;
    float price = 0.00, total_price = 0.00, final_price = 0.00;
    cout << "Enter the total number of products you have purchased: ";
    cin >> total_items;
    for(int i = 1; i <= total_items; i++){
        cout << "Enter the price of your item no. "<<i<<": ";
        cin >> price;
        cout << "Enter the quantity of your item no. "<<i<<": ";
        cin >> qt;
        cout << "-------------------------------"<<endl;
        total_price = (price*qt);
        final_price = final_price + total_price;
    }
    cout << "Final payable amount is: "<<final_price;
}
```

Output:

```
PS D:\Hasan\cpp\university\lab04> g++ task02.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter the total number of products you have purchased: 4
Enter the price of your item no. 1: 10
Enter the quantity of your item no. 1: 2
------------------------------
Enter the price of your item no. 2: 400
Enter the quantity of your item no. 2: 1
------------------------------
Enter the price of your item no. 3: 34
Enter the quantity of your item no. 3: 2
------------------------------
Enter the price of your item no. 4: 90
Enter the quantity of your item no. 4: 5
------------------------------
Final payable amount is: 938
PS D:\Hasan\cpp\university\lab04>
```

Task 03:

```cpp
/*Prime Checker
A group of students is tasked with creating a C++ project titled "Prime Number Addition." The goal is to input 10 integers provided by the user, and the program will then identify prime numbers among these inputs and calculate their sum. Using a for loop, the program will prompt the user to input each integer individually. After gathering the inputs, it will calculate the sum of the prime numbers and display the result*/

#include<iostream>
using namespace std;
int main(){
    int n = 0;
    cout << "Enter number: ";
    cin >> n;
    int count = 0;
    for(int i = 1; i <= n; i++){
        if(n%i == 0){
            count++;
        }
    }
    if(count == 2){
        cout << "It is a prime number."<<endl;
    }
    else{
        cout << "It is not a prime number."<<endl;
    }
}
```

Output:

```
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter number: 7
It is a prime number.
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter number: 2
It is a prime number.
PS D:\Hasan\cpp\university\lab04>
```

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF {} C++ Go Live windows-gcc-x86

Task 04:

```cpp
/*GCD HCF FINDER

As part of a school project, you're developing a mathematical utility program in C++. One of the essential features you aim to implement is finding the greatest common divisor (GCD), also referred to as the highest common factor (HCF), of two given numbers.
This functionality is designed to aid students in comprehending the concept of common divisors between two numbers using C++ and a while loop.*/

#include<iostream>
using namespace std;
int main(){
    int n1 = 0, n2 = 0, hcf = 0;
    cout << "Enter first number: ";
    cin >> n1;
    cout << "Enter second number: ";
    cin >> n2;
    int i = 1;
    while(i <= n1 && i <= n2){
        if(n1%i == 0 && n2%i == 0){
            hcf = i;
        }
        i++;
    }
    cout << "The HCF is: "<<hcf<<endl;
}
```

Output:

```
PS D:\Hasan\cpp\university\lab04> g++ task04.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter first number: 13
Enter second number: 16
The HCF is: 1
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter first number: 24
Enter second number: 12
The HCF is: 12
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter first number: 40
Enter second number: 73
The HCF is: 1
PS D:\Hasan\cpp\university\lab04>
Ln 1, Col 1  Spaces: 4  UTF-8  CRLF  {} C++  Go Live  windows-gcc-x86
```

Task 05:

```cpp
/* Academic Excellence Awards Ceremony

At an Academic Excellence Awards Ceremony, the organizers want to recognize
students' achievements in mathematics by calculating the factorial of their
scores.
The factorial value will be used to determine the complexity level of problems
they solved.*/

#include<iostream>
using namespace std;
int main(){
    int total_stu = 0;
    cout << "Enter no. of students: ";
    cin >> total_stu;
    cout << endl;
    int count = 1;
    while(count <= total_stu){
        int marks = 0, fact = 1;
        cout << "Enter  marks of student no. "<<count<<": ";
        cin >> marks;
        for(int i = 1; i <= marks; i++){
            fact = fact*i;
        }
        cout << "Factorial of marks is: "<<fact<<endl;
        cout << endl;
        count++;
    }
}
```

Output:

```
PS D:\Hasan\cpp\university\lab04> g++ task05.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter no. of students: 3

Enter  marks of student no. 1: 15
Factorial of marks is: 2004310016

Enter  marks of student no. 2: 10
Factorial of marks is: 3628800

Enter  marks of student no. 3: 8
Factorial of marks is: 40320

PS D:\Hasan\cpp\university\lab04>
```

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF {} C++ Go Live windows-gcc-x86

Task 06:

```cpp
/*Multiplication Visualization

To enhance the multiplication concept of your students you decide to make program which help then to visualize the how multiplication is done. Write C++ programming language using do-while loop for visualization of multiplication of table of any number enter by user*/

#include<iostream>
using namespace std;
int main(){
    int num = 0, lim = 0;
    cout << "Enter number of which you want to see table: ";
    cin >> num;
    cout << "Enter number till which you want to multiplication: ";
    cin >> lim;
    for(int i = 1; i <= lim; i++){
        cout<<num <<" * "<<i<<" = "<<num*i<<endl;
    }
}
```

Output:

```
PS D:\Hasan\cpp\university\lab04> g++ task06.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter number of which you want to see table: 6
Enter number till which you want to multiplication: 9
6 * 1 = 6
6 * 2 = 12
6 * 3 = 18
6 * 4 = 24
6 * 5 = 30
6 * 6 = 36
6 * 7 = 42
6 * 8 = 48
6 * 9 = 54
PS D:\Hasan\cpp\university\lab04>
```

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF {} C++ Go Live windows-gcc-x86

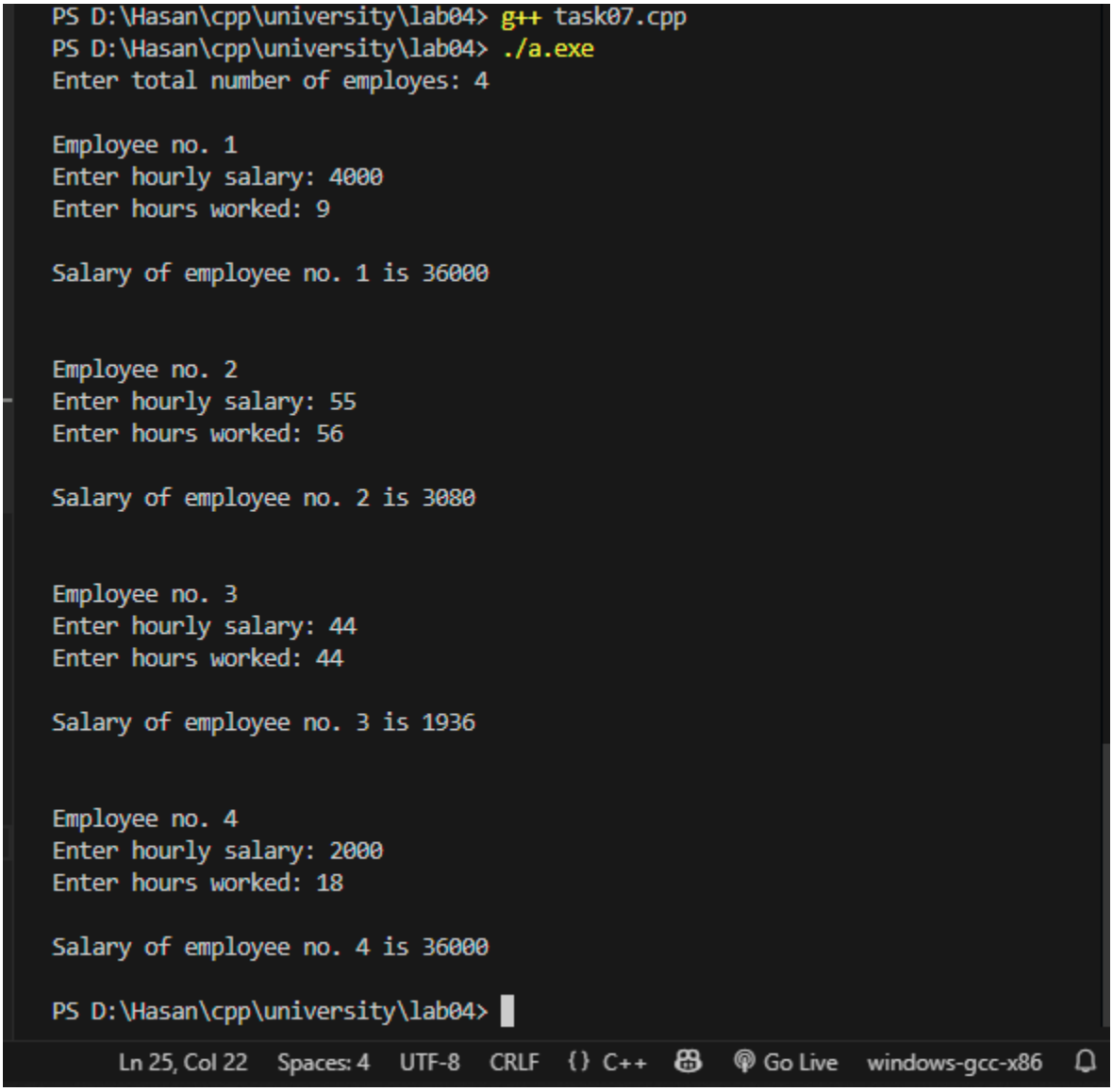
Task 07:

```cpp
/*Employee Payroll Calculation

In a small company, you've been tasked with developing a C++ program to calculate the payroll for employees.
Each employee has a unique hourly wage and works a different number of hours per week.
Your program needs to calculate the weekly pay for each employee based on their hourly wage and hours worked.*/


#include<iostream>
using namespace std;
int main(){
    int total_emp = 0;
    cout << "Enter total number of employes: ";
    cin >> total_emp;
    for(int i = 1; i <= total_emp; i++){
        int hrs = 0, sal = 0, final_sal = 0;
        cout << endl;
        cout << "Employee no. "<<i<<endl;
        cout << "Enter hourly salary: ";
        cin >> sal;
        cout << "Enter hours worked: ";
        cin >> hrs;
        final_sal = hrs*sal;
        cout << endl;
        cout << "Salary of employee no. "<<i<<" is "<<final_sal<<endl;
        cout << endl;
    }
}
```

Output:


PS D:\Hasan\cpp\university\lab04> g++ task07.cpp
PS D:\Hasan\cpp\university\lab04> ./a.exe
Enter total number of employes: 4
Employee no. 1
Enter hourly salary: 4000
Enter hours worked: 9
Salary of employee no. 1 is 36000
Employee no. 2
Enter hourly salary: 55
Enter hours worked: 56
Salary of employee no. 2 is 3080
Employee no. 3
Enter hourly salary: 44
Enter hours worked: 44
Salary of employee no. 3 is 1936
Employee no. 4
Enter hourly salary: 2000
Enter hours worked: 18
Salary of employee no. 4 is 36000
PS D:\Hasan\cpp\university\lab04>
Ln 25, Col 22 Spaces: 4 UTF-8 CRLF {} C++ Go Live windows-gcc-x86