

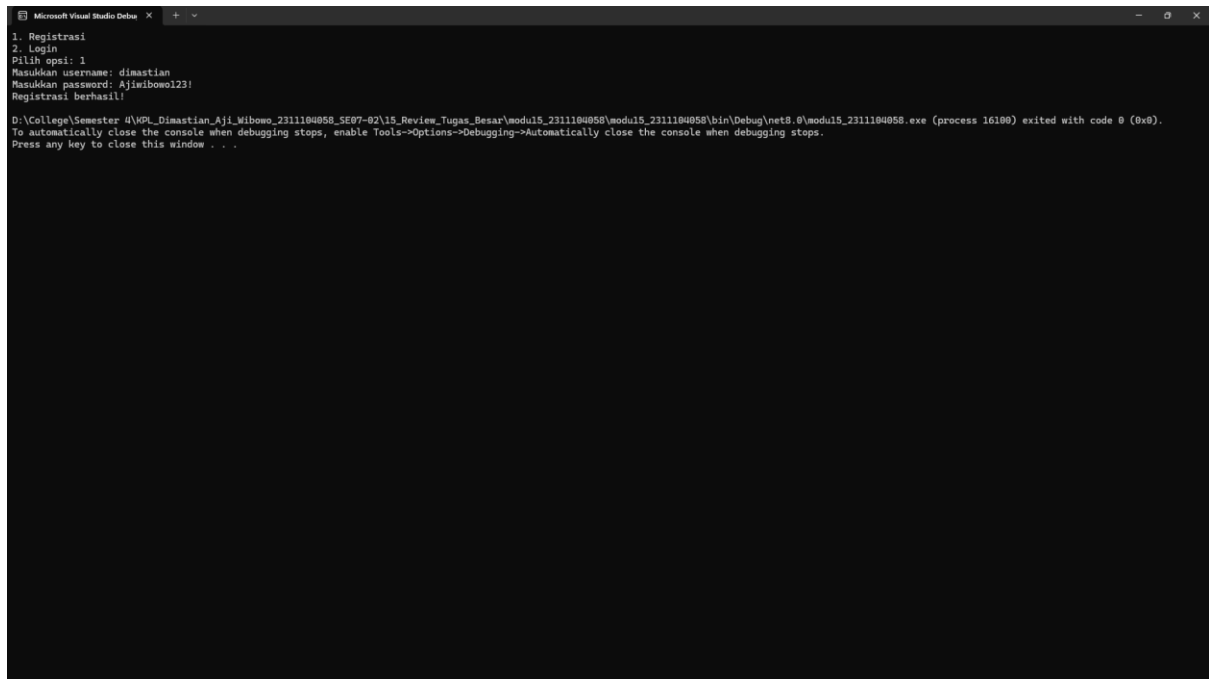
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NIM : 2311104058

JURNAL MODUL 15

Skenario

Berhasil Melakukan Registrasi



```
Microsoft Visual Studio Debug
1. Registrasi
2. Login
Pilih opsi: 1
Masukkan username: dimastian
Masukkan password: Ajiwibowol23!
Registrasi berhasil!

D:\College\Semester 4\KRL_Dimastian_Aji_Wibowo_2311104058_SE87-02\15_Review_Tugas_Besar\modul15_2311104058\modul15_2311104058\bin\Debug\net8.0\modul15_2311104058.exe (process 16100) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Berhasil Melakukan Login

```
Microsoft Visual Studio Debug Console
1. Registrasi
2. Login
Pilih opsi: 2
Masukkan username: dimastian
Masukkan password: Ajiwibowo123!
Login berhasil!

D:\College\Semester 4\KPL_Dimastian_Aji_Wibowo_2311104058_SE07-02\15_Review_Tugas_Besar\modu15_2311104058\modu15_2311104058\bin\Debug\net8.0\modu15_2311104058.exe (process 12208) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Login Password Salah

```
Microsoft Visual Studio Debug Console
1. Registrasi
2. Login
Pilih opsi: 2
Masukkan username: dimastian
Masukkan password: dimastianajiwibowo
Login gagal. Username atau password salah.

D:\College\Semester 4\KPL_Dimastian_Aji_Wibowo_2311104058_SE07-02\15_Review_Tugas_Besar\modu15_2311104058\modu15_2311104058\bin\Debug\net8.0\modu15_2311104058.exe (process 8636) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Login Username Salah

```
Microsoft Visual Studio Debug Console
1. Registrasi
2. Login
Pilih opsi: 2
Masukkan username: aji
Masukkan password: Ajiwibowo123!
Login gagal. Username atau password salah.

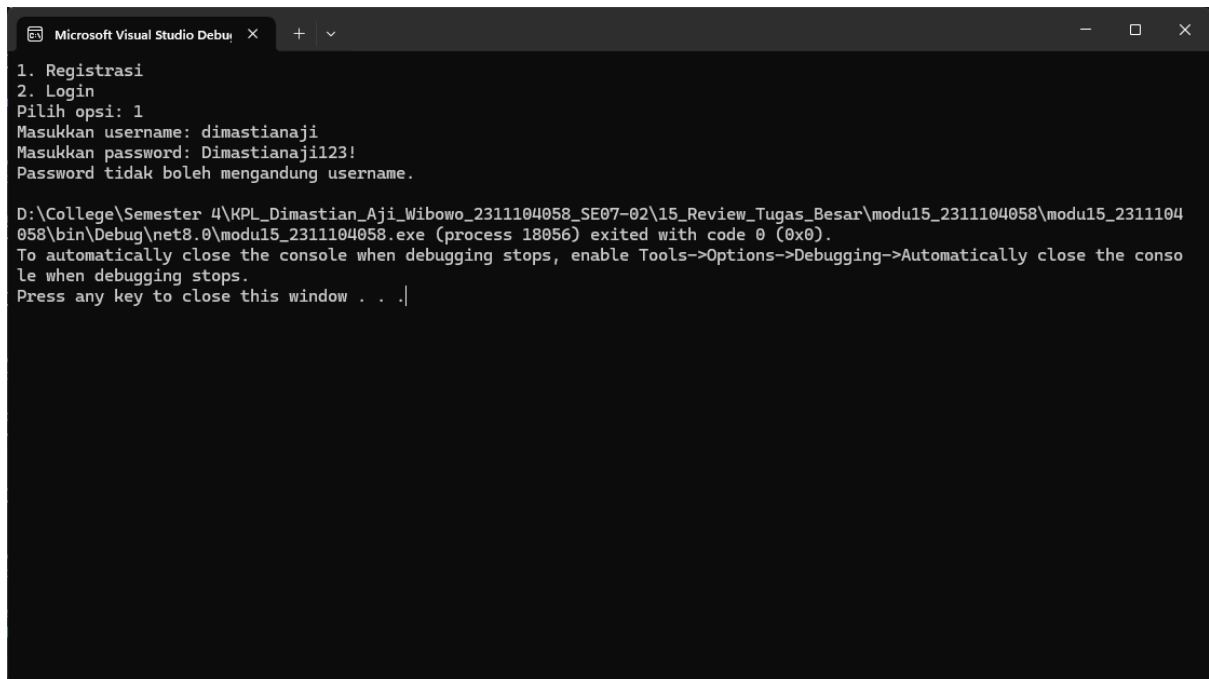
D:\College\Semester 4\KPL_Dimastian_Aji_Wibowo_2311104058_SE07-02\15_Review_Tugas_Besar\modu15_2311104058\modu15_2311104058\bin\Debug\net8.0\modu15_2311104058.exe (process 1972) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Registrasi Gagal Karakter Password Kurang

```
Microsoft Visual Studio Debug Console
1. Registrasi
2. Login
Pilih opsi: 1
Masukkan username: aji
Masukkan password: Aji123!
Password harus antara 8-20 karakter.

D:\College\Semester 4\KPL_Dimastian_Aji_Wibowo_2311104058_SE07-02\15_Review_Tugas_Besar\modu15_2311104058\modu15_2311104058\bin\Debug\net8.0\modu15_2311104058.exe (process 3176) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```

Registrasi Gagal Password Mengandung Username



```
Microsoft Visual Studio Debug Console
1. Registrasi
2. Login
Pilih opsi: 1
Masukkan username: dimastianaji
Masukkan password: Dimastianaji123!
Password tidak boleh mengandung username.

D:\College\Semester 4\KPL_Dimastian_Aji_Wibowo_2311104058_SE07-02\15_Review_Tugas_Besar\modu15_2311104058\modu15_2311104058\bin\Debug\net8.0\modu15_2311104058.exe (process 18056) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```

Source Code

```
using System;
using System.Collections.Generic;
using System.IO;
using System.Security.Cryptography;
using System.Text;
using System.Text.Json;
using System.Text.RegularExpressions;

class User
{
    public string Username { get; set; }
    public string PasswordHash { get; set; }
}

class Program
{
    static string filePath = "users.json";
    static List<User> users = new List<User>();

    static void Main()
    {
        LoadUsers();

        Console.WriteLine("1. Registrasi\n2. Login");
        Console.Write("Pilih opsi: ");
        string pilihan = Console.ReadLine();

        if (pilihan == "1")
            Register();
        else if (pilihan == "2")
            Login();
        else
            Console.WriteLine("Pilihan tidak valid.");
    }

    static void Register()
    {
        Console.Write("Masukkan username: ");
        string username = Console.ReadLine();

        Console.Write("Masukkan password: ");
        string password = Console.ReadLine();

        if (!IsValidInput(username, password))
            return;

        string hashedPassword = HashPassword(password);
        users.Add(new User { Username = username, PasswordHash = hashedPassword });
        SaveUsers();

        Console.WriteLine("Registrasi berhasil!");
    }

    static void Login()
    {
        Console.Write("Masukkan username: ");
        string username = Console.ReadLine();

        Console.Write("Masukkan password: ");
        string password = Console.ReadLine();

        string hashedPassword = HashPassword(password);
        foreach (var user in users)
        {
            if (user.Username == username && user.PasswordHash == hashedPassword)
```

```

        {
            Console.WriteLine("Login berhasil!");
            return;
        }
    }

    Console.WriteLine("Login gagal. Username atau password salah.");
}

static bool IsValidInput(string username, string password)
{
    if (password.Length < 8 || password.Length > 20)
    {
        Console.WriteLine("Password harus antara 8-20 karakter.");
        return false;
    }

    if (!Regex.IsMatch(password, @"[!@#$$%^&*]"))
    {
        Console.WriteLine("Password harus mengandung minimal 1 karakter unik (!@#$$%^&*).");
        return false;
    }

    if (password.ToLower().Contains(username.ToLower()))
    {
        Console.WriteLine("Password tidak boleh mengandung username.");
        return false;
    }

    return true;
}

static string HashPassword(string password)
{
    using (SHA256 sha256 = SHA256.Create())
    {
        byte[] bytes = sha256.ComputeHash(Encoding.UTF8.GetBytes(password));
        return Convert.ToBase64String(bytes);
    }
}

static void LoadUsers()
{
    if (File.Exists(filePath))
    {
        string json = File.ReadAllText(filePath);
        users = JsonSerializer.Deserialize<List<User>>(json) ?? new List<User>();
    }
}

static void SaveUsers()
{
    string json = JsonSerializer.Serialize(users, new JsonSerializerOptions { WriteIndented = true });
    File.WriteAllText(filePath, json);
}
}

```

Program ini merupakan aplikasi registrasi dan login user berbasis *console* dengan penerapan prinsip *Secure Coding Practices*. Aplikasi memungkinkan pengguna untuk membuat akun (registrasi) dan masuk ke sistem (login) dengan menyimpan data secara lokal dalam format file JSON (`users.json`). Data yang disimpan meliputi username dan password yang telah di-*hash* menggunakan algoritma SHA256, sehingga meningkatkan keamanan penyimpanan. Validasi input dilakukan untuk memastikan bahwa password memiliki panjang 8–20 karakter, mengandung minimal satu karakter spesial (!@#\$%^&*), dan tidak mengandung nama pengguna untuk mencegah kelemahan umum dalam pemilihan kata sandi. Saat login, sistem mencocokkan input pengguna dengan data yang telah tersimpan secara aman di file JSON. Dengan penggunaan teknik hashing, validasi input, dan penyimpanan terstruktur, aplikasi ini telah memenuhi standar pengembangan perangkat lunak yang aman.