

TUGAS 4
PRAKTIKUM PEMOGRAMAN BERBASIS WEB
Untuk Memenuhi Praktikum Pemograman Berbasis Web



Oleh:

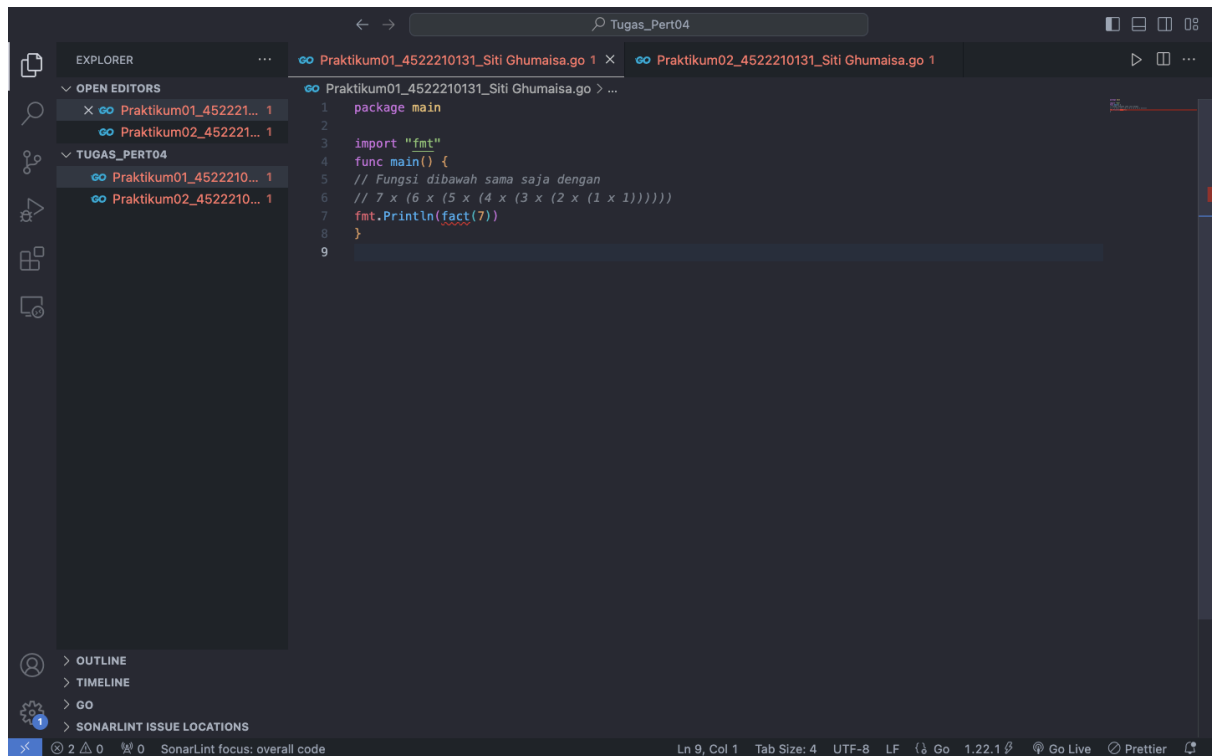
Nama : Siti Ghumaisa
NPM : 4522210131
Kelas : A
Semester : 4 (Genap)

Dosen :

ADI WAHYU PRIBADI ,S.SI.,M.KOM
S1-Teknik Informatika
Fakultas Teknik Universitas Pancasila
2023/2024

Tugas 1

- Program awal

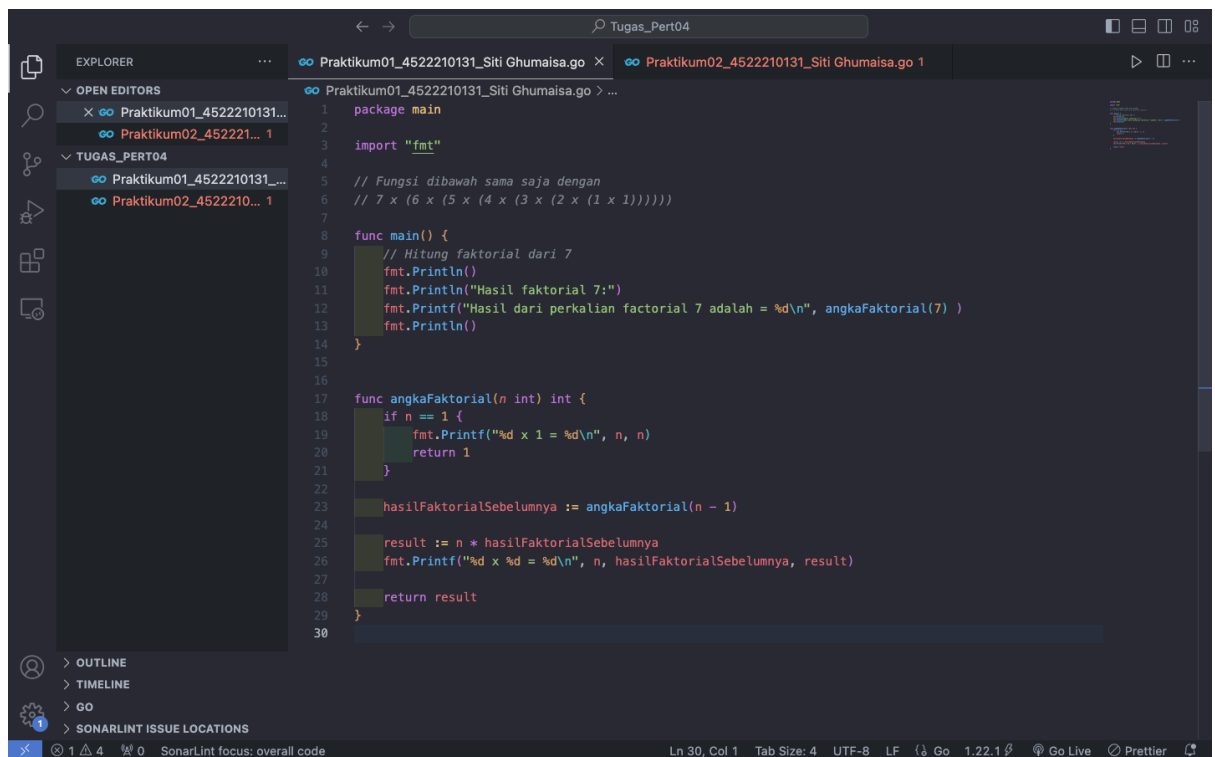


The screenshot shows the VS Code interface with a Go file named `Praktikum01_4522210131_Siti Ghumaisa.go`. The code is as follows:

```
1 package main
2
3 import "fmt"
4 func main() {
5     // Fungsi dibawah sama saja dengan
6     // 7 x (6 x (5 x (4 x (3 x (2 x (1 x 1))))))
7     fmt.Println(fact(7))
8 }
9
```

The Explorer sidebar shows the file structure with `TUGAS_PERT04` containing the current file. The status bar at the bottom indicates the file is at line 9, column 1, with a tab size of 4, UTF-8 encoding, and LF line endings.

- Program setelah diperbaiki

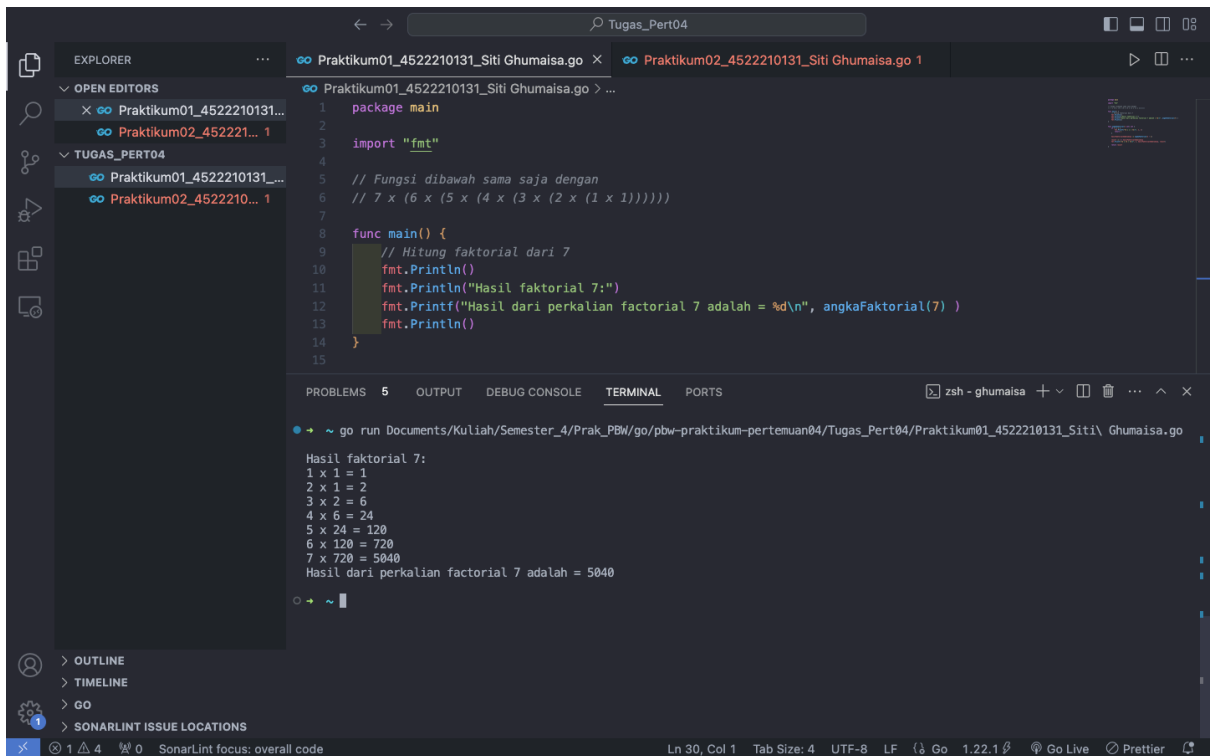


The screenshot shows the VS Code interface with the same Go file, but the code has been updated to use a recursive function `angkaFaktorial` to calculate the factorial of 7. The code is as follows:

```
1 package main
2
3 import "fmt"
4
5 // Fungsi dibawah sama saja dengan
6 // 7 x (6 x (5 x (4 x (3 x (2 x (1 x 1))))))
7
8 func main() {
9     // Hitung faktorial dari 7
10    fmt.Println()
11    fmt.Println("Hasil faktorial 7:")
12    fmt.Printf("Hasil dari perkalian factorial 7 adalah = %d\n", angkaFaktorial(7) )
13    fmt.Println()
14 }
15
16
17 func angkaFaktorial(n int) int {
18     if n == 1 {
19         fmt.Printf("%d x 1 = %d\n", n, n)
20         return 1
21     }
22
23     hasilFaktorialSebelumnya := angkaFaktorial(n - 1)
24
25     result := n * hasilFaktorialSebelumnya
26     fmt.Printf("%d x %d = %d\n", n, hasilFaktorialSebelumnya, result)
27
28     return result
29 }
30
```

The Explorer sidebar shows the file structure with `TUGAS_PERT04` containing the current file. The status bar at the bottom indicates the file is at line 30, column 1, with a tab size of 4, UTF-8 encoding, and LF line endings.

Output



The screenshot shows a VS Code editor with a Go file named `Praktikum01_4522210131_Siti Ghumaisa.go`. The code calculates the factorial of 7 using a recursive function. The terminal output shows the calculation steps and the final result.

```
package main

import "fmt"

// Fungsi dibawah sama saja dengan
// 7 x (6 x (5 x (4 x (3 x (2 x (1 x 1))))))

func main() {
    // Hitung faktorial dari 7
    fmt.Println()
    fmt.Println("Hasil faktorial 7:")
    fmt.Printf("Hasil dari perkalian faktorial 7 adalah = %d\n", angkaFaktorial(7) )
    fmt.Println()
}
```

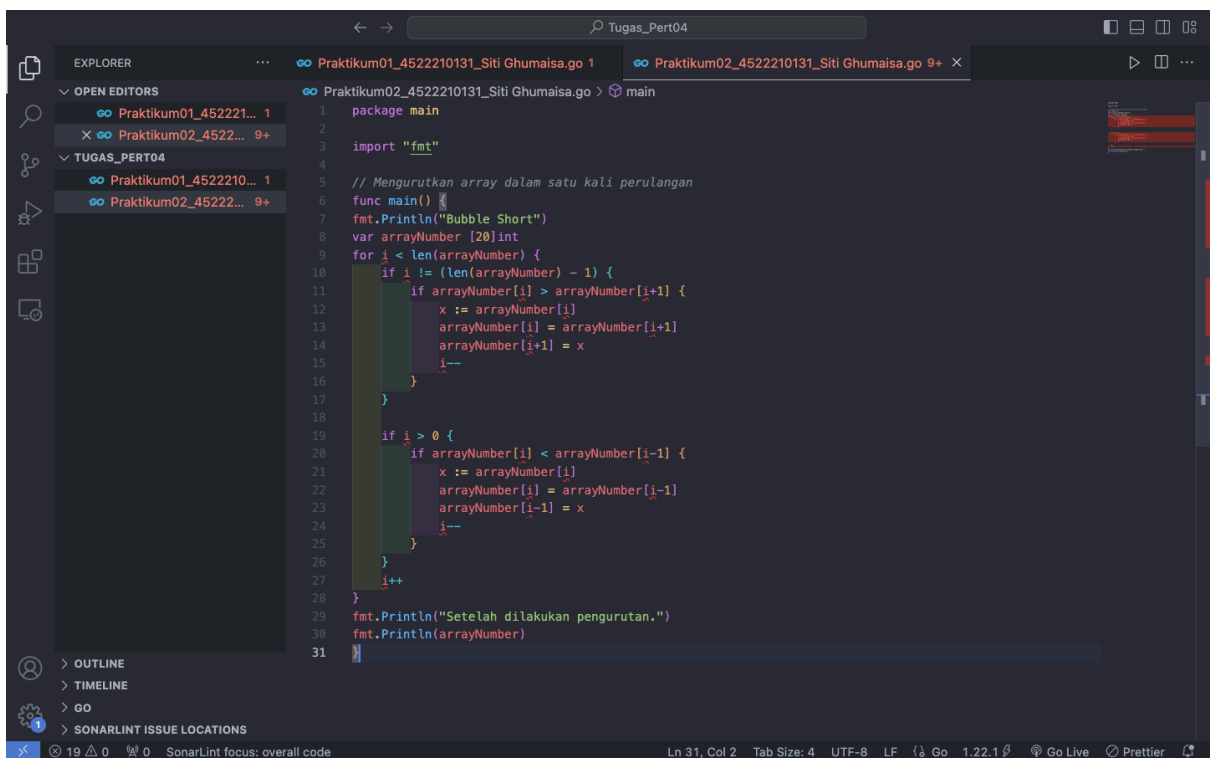
Terminal Output:

```
~ go run Documents/Kuliah/Semester_4/Prak_PBW/go/pbw-praktikum-pertemuan04/Tugas_Pert04/Praktikum01_4522210131_Siti Ghumaisa.go

Hasil faktorial 7:
1 x 1 = 1
2 x 1 = 2
3 x 2 = 6
4 x 6 = 24
5 x 24 = 120
6 x 120 = 720
7 x 720 = 5040
Hasil dari perkalian faktorial 7 adalah = 5040
```

Tugas 2

- Program awal



The screenshot shows a VS Code editor with a Go file named `Praktikum02_4522210131_Siti Ghumaisa.go`. The code implements a Bubble Sort algorithm to sort an array of 20 integers. The terminal output shows the array before and after sorting.

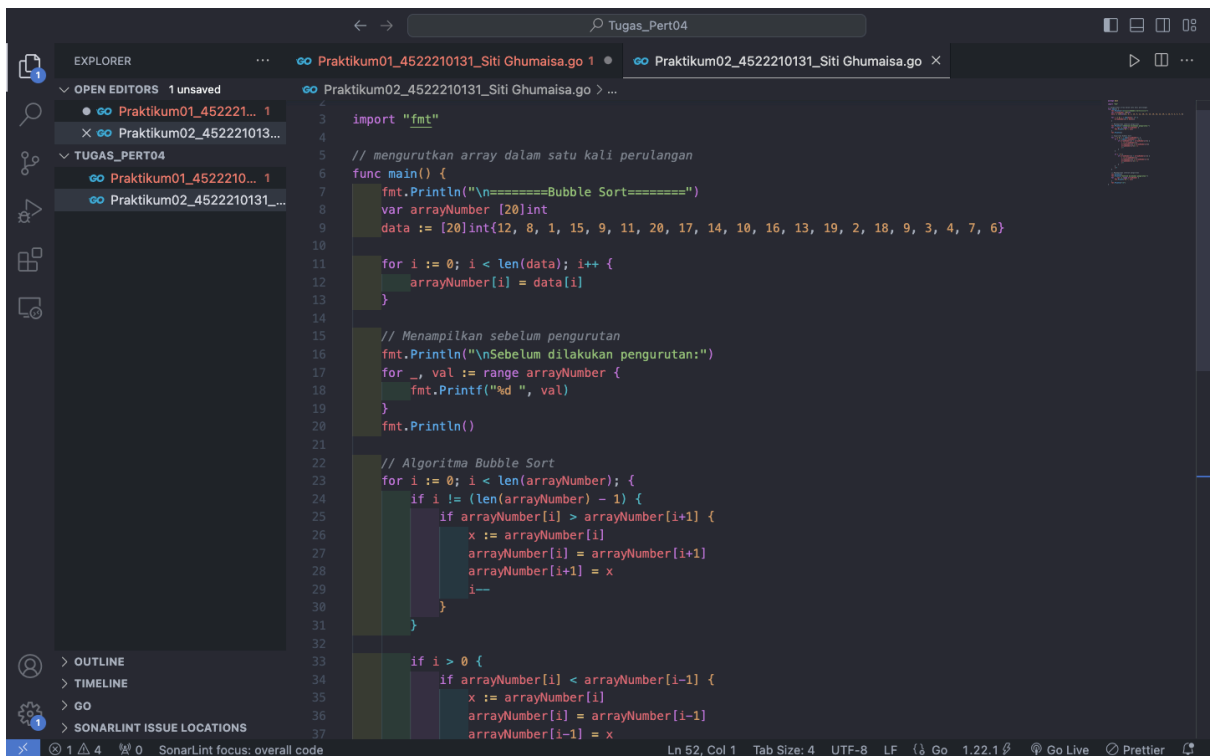
```
package main

import "fmt"

// Mengurutkan array dalam satu kali perulangan

func main() {
    fmt.Println("Bubble Sort")
    var arrayNumber [20]int
    for i < len(arrayNumber) {
        if i != (len(arrayNumber) - 1) {
            if arrayNumber[i] > arrayNumber[i+1] {
                x := arrayNumber[i]
                arrayNumber[i] = arrayNumber[i+1]
                arrayNumber[i+1] = x
                i--
            }
        }
        if i > 0 {
            if arrayNumber[i] < arrayNumber[i-1] {
                x := arrayNumber[i]
                arrayNumber[i] = arrayNumber[i-1]
                arrayNumber[i-1] = x
                i--
            }
        }
        i++
    }
    fmt.Println("Setelah dilakukan pengurutan.")
    fmt.Println(arrayNumber)
}
```

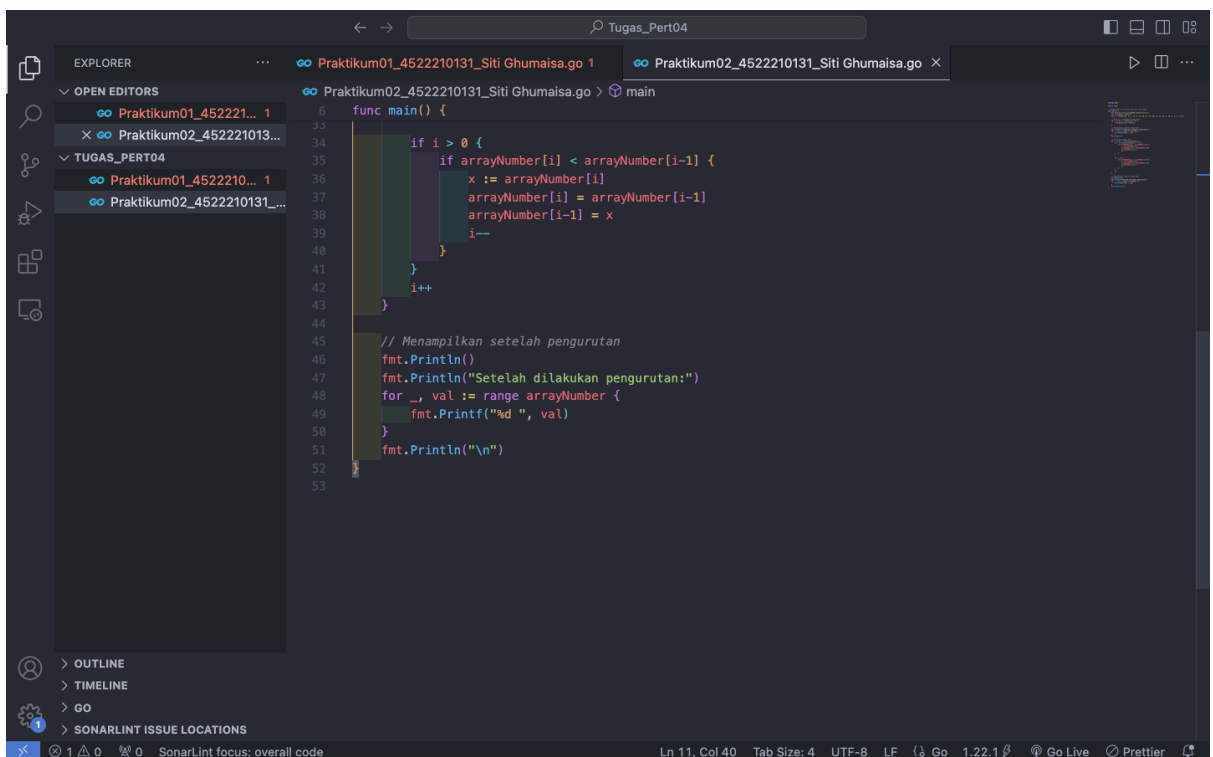
- Program setelah diperbaiki



```

3  import "fmt"
4
5  // mengurutkan array dalam satu kali perulangan
6  func main() {
7      fmt.Println("\n=====Bubble Sort=====")
8      var arrayNumber [20]int
9      data := [20]int{12, 8, 1, 15, 9, 11, 20, 17, 14, 10, 16, 13, 19, 2, 18, 9, 3, 4, 7, 6}
10
11     for i := 0; i < len(data); i++ {
12         arrayNumber[i] = data[i]
13     }
14
15     // Menampilkan sebelum pengurutan
16     fmt.Println("\nSebelum dilakukan pengurutan:")
17     for _, val := range arrayNumber {
18         fmt.Printf("%d ", val)
19     }
20     fmt.Println()
21
22     // Algoritma Bubble Sort
23     for i := 0; i < len(arrayNumber); {
24         if i != (len(arrayNumber) - 1) {
25             if arrayNumber[i] > arrayNumber[i+1] {
26                 x := arrayNumber[i]
27                 arrayNumber[i] = arrayNumber[i+1]
28                 arrayNumber[i+1] = x
29                 i--
30             }
31         }
32
33         if i > 0 {
34             if arrayNumber[i] < arrayNumber[i-1] {
35                 x := arrayNumber[i]
36                 arrayNumber[i] = arrayNumber[i-1]
37                 arrayNumber[i-1] = x

```

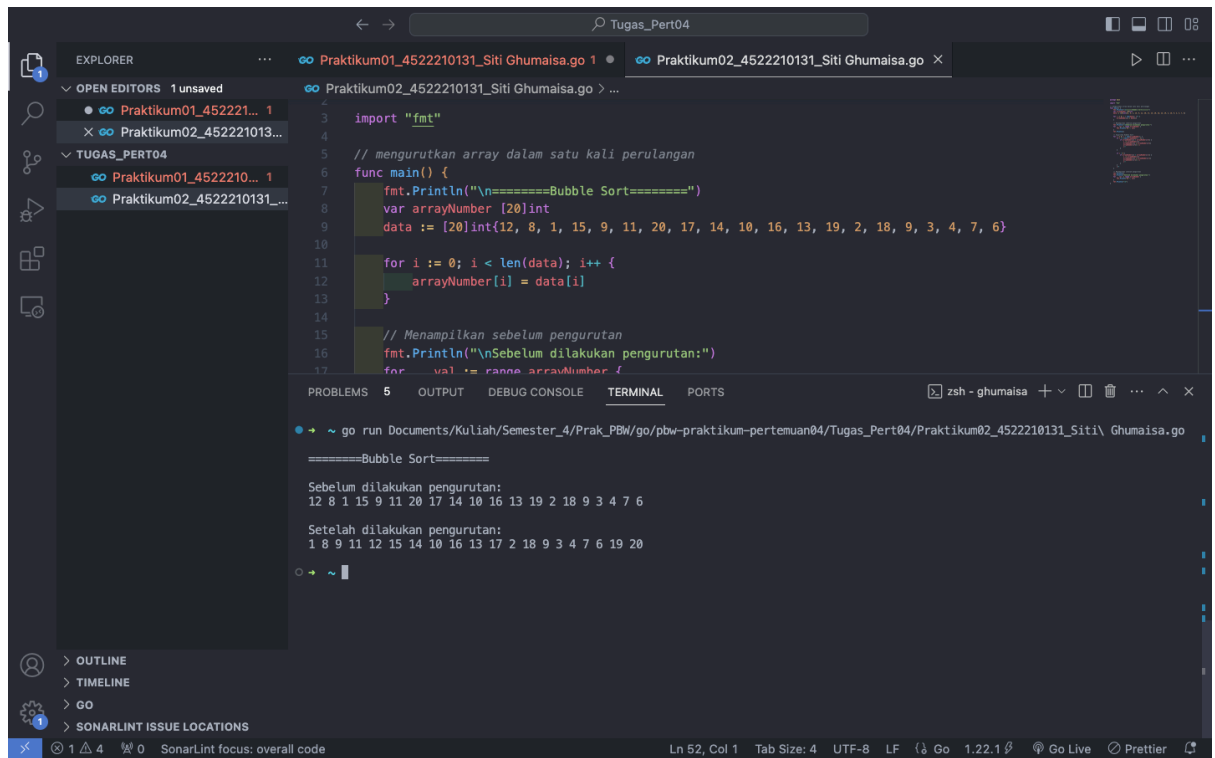


```

6  func main() {
33
34     if i > 0 {
35         if arrayNumber[i] < arrayNumber[i-1] {
36             x := arrayNumber[i]
37             arrayNumber[i] = arrayNumber[i-1]
38             arrayNumber[i-1] = x
39             i--
40         }
41     }
42     i++
43 }
44
45 // Menampilkan setelah pengurutan
46 fmt.Println()
47 fmt.Println("Setelah dilakukan pengurutan:")
48 for _, val := range arrayNumber {
49     fmt.Printf("%d ", val)
50 }
51 fmt.Println("\n")
52
53

```

Output



The screenshot shows a Visual Studio Code editor with a Go file named `Praktikum02_4522210131_Siti Ghumaisa.go`. The code implements a Bubble Sort algorithm. The terminal output shows the execution of the program, displaying the array before and after sorting.

```
import "fmt"

// mengurutkan array dalam satu kali perulangan
func main() {
    fmt.Println("\n=====Bubble Sort=====")
    var arrayNumber [20]int
    data := [20]int{12, 8, 1, 15, 9, 11, 20, 17, 14, 10, 16, 13, 19, 2, 18, 9, 3, 4, 7, 6}

    for i := 0; i < len(data); i++ {
        arrayNumber[i] = data[i]
    }

    // Menampilkan sebelum pengurutan
    fmt.Println("\nSebelum dilakukan pengurutan:")
    for _, val := range arrayNumber {
        fmt.Print(val, " ")
    }
    fmt.Println()

    // Menampilkan setelah pengurutan
    fmt.Println("\nSetelah dilakukan pengurutan:")
    for _, val := range arrayNumber {
        fmt.Print(val, " ")
    }
    fmt.Println()
}
```

Terminal Output:

```
~ go run Documents/Kuliah/Semester_4/Prak_PBW/go/pbw-praktikum-pertemuan04/Tugas_Pert04/Praktikum02_4522210131_Siti Ghumaisa.go
=====Bubble Sort=====

Sebelum dilakukan pengurutan:
12 8 1 15 9 11 20 17 14 10 16 13 19 2 18 9 3 4 7 6

Setelah dilakukan pengurutan:
1 8 9 11 12 15 14 10 16 13 17 2 18 9 3 4 7 6 19 20
```

Link github

<https://github.com/Ghumaisa/PBW>