

Chapter 1: Data Structures and Algorithms

```
hello_world — -bash — 81×19
Bhagvans-MacBook-Pro:code bhagvankommadi$ ls
chapter1      chapter2      hello_world
Bhagvans-MacBook-Pro:code bhagvankommadi$ cd hello_world
Bhagvans-MacBook-Pro:hello_world bhagvankommadi$ ls
hello_world.go
Bhagvans-MacBook-Pro:hello_world bhagvankommadi$ go build
Bhagvans-MacBook-Pro:hello_world bhagvankommadi$ ls
hello_world      hello_world.go
Bhagvans-MacBook-Pro:hello_world bhagvankommadi$ ./hello_world
Hello, World
Bhagvans-MacBook-Pro:hello_world bhagvankommadi$
```

Data Structures

Linear

- Lists
- Sets
- Tuples
- Queues
- Stacks
- Heaps

Non-Linear

- Trees
- Tables
- Containers

Homogeneous

- 2D Arrays
- MultiDArrays

Heterogeneous

- Linked Lists
- Ordered Lists
- UnOrdered Lists

Dynamic

- Dictionaries
- TreeSets
- Sequences

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run list.go
11
23
34
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run tuples.go
Square 9 Cube 27
16 64
25 125 <nil>
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run heap.go
minimum: 1
1
2
4
5
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run adapter.go
Adapter process
Adaptee convert method
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$ go run bridge.go
Drawing Contour
Drawing Shape
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$ go run composite.go
Branch: branch 1
Leaflet leaf 1
Leaflet leaf 2
Branch: branch 2
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$
```

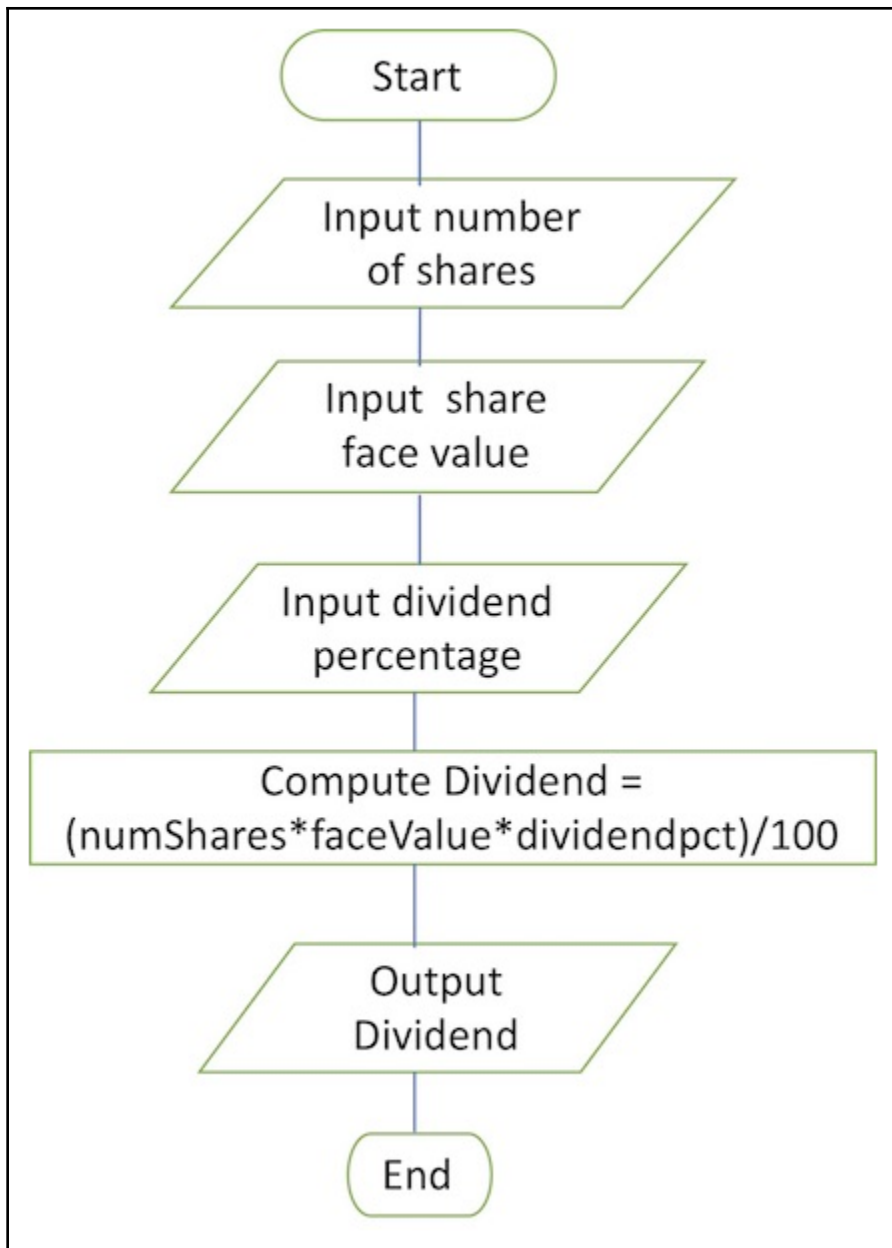
```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$ go run decorator.go
ProcessDecorator process
ProcessDecorator process and ProcessClass process
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$ go run facade.go
creating customer
account creation with type
Thomas Smith
Savings
creating transaction
1000
Bhagvans-MacBook-Pro:chapter1 bhagvankommedi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run flyweight.go
new DTO of dtoType: customer
Customer 1
new DTO of dtoType: employee
Employee 2
new DTO of dtoType: manager
Manager 3
new DTO of dtoType: address
Address 4
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run privateclass.go
Private Class hidden {"CustomerName":"John Smith"}
Account Id 4532
Account Type current
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run virtualproxy.go
Virtual Proxy performAction()
RealObject performAction()
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```



```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run complexity.go
Element[0] = 200
Element[1] = 201
Element[2] = 202
Element[3] = 203
Element[4] = 204
Element[5] = 205
Element[6] = 206
Element[7] = 207
Element[8] = 208
Element[9] = 209
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

```
chapter1 — -bash — 81×24
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$ go run linear_complexity.go
Element[0] = 0
Element[1] = 200
Element[2] = 400
Element[3] = 600
Element[4] = 800
Element[5] = 1000
Element[6] = 1200
Element[7] = 1400
Element[8] = 1600
Element[9] = 1800
Bhagvans-MacBook-Pro:chapter1 bhagvankomadi$
```

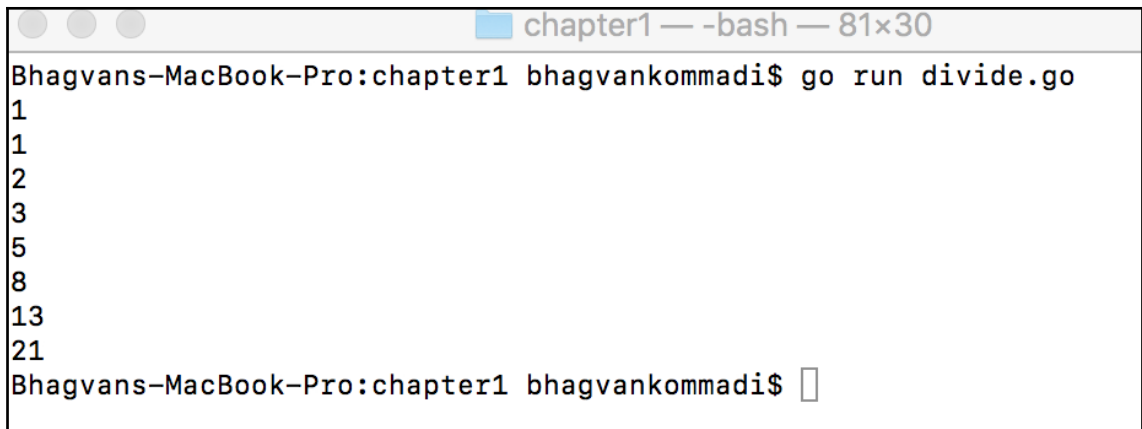
```
chapter1 — -bash — 81×30
[Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run quadratic_complexity.go
Multiplication Table 1
1
2
3
4
5
6
7
8
9
10
Multiplication Table 2
2
4
6
8
10
12
14
16
18
20
Multiplication Table 3
3
6
9
12
15
18
```

```
chapter1 — -bash — 81x30
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run cubic_complexity.go
Element value 0 0 0 is 1
Element value 0 0 1 is 1
Element value 0 0 2 is 1
Element value 0 0 3 is 1
Element value 0 0 4 is 1
Element value 0 0 5 is 1
Element value 0 0 6 is 1
Element value 0 0 7 is 1
Element value 0 0 8 is 1
Element value 0 0 9 is 1
Element value 0 1 0 is 1
Element value 0 1 1 is 1
Element value 0 1 2 is 1
Element value 0 1 3 is 1
Element value 0 1 4 is 1
Element value 0 1 5 is 1
Element value 0 1 6 is 1
Element value 0 1 7 is 1
Element value 0 1 8 is 1
Element value 0 1 9 is 1
Element value 0 2 0 is 1
Element value 0 2 1 is 1
Element value 0 2 2 is 1
Element value 0 2 3 is 1
Element value 0 2 4 is 1
Element value 0 2 5 is 1
Element value 0 2 6 is 1
Element value 0 2 7 is 1
Element value 0 2 8 is 1
```



```
chapter1 — -bash — 81×30
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run tree.go
Value 1
Tree Node LeftNil
Tree Node RightNil
Value 1
Tree Node Left Value 3
Tree Node LeftNil
Tree Node RightNil
Tree Node RightNil
Value 1
Tree Node Left Value 3
Tree Node LeftNil
Tree Node RightNil
Tree Node Right Value 5
Tree Node LeftNil
Tree Node RightNil
Value 1
Tree Node Left Value 3
Tree Node Left Value 7
Tree Node LeftNil
Tree Node RightNil
Tree Node RightNil
Tree Node Right Value 5
Tree Node LeftNil
Tree Node RightNil
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```

```
chapter1 — -bash — 81×30
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run bruteforce.go
false
true
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```



```
chapter1 — -bash — 81x30
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run divide.go
1
1
2
3
5
8
13
21
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$
```

```
Bhagvans-MacBook-Pro:chapter1 bhagvankommadi$ go run backtracking.go
```

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 2,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 1, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 3,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 2, 1,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 3, 1, 1, 1,

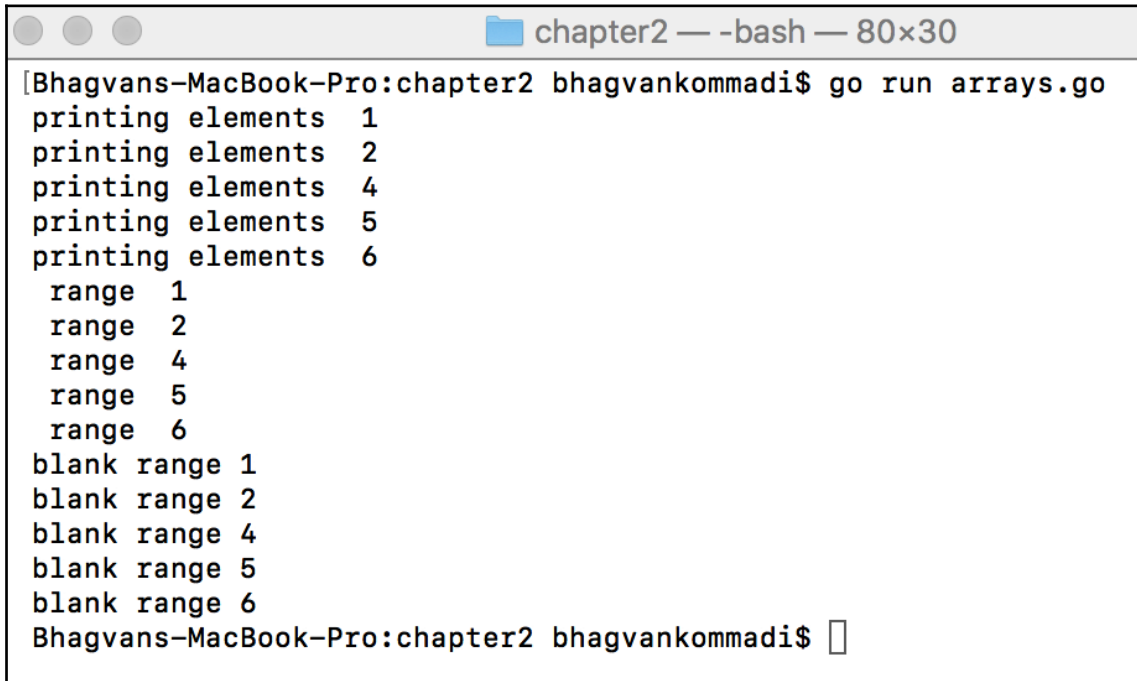
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 1, 1,

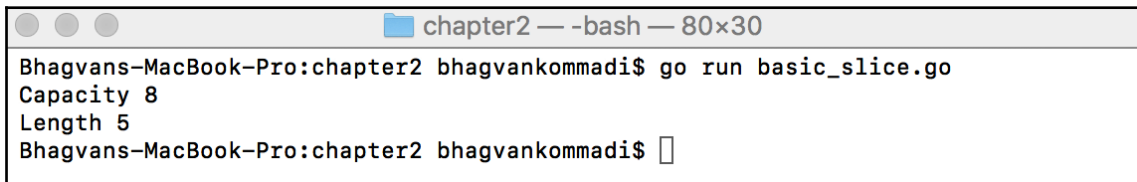
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 4,

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1, 1, 1, 1,

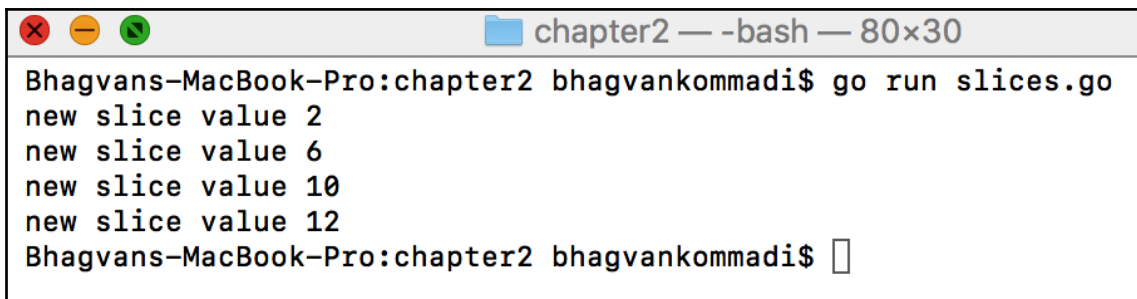
Chapter 2: Getting Started with Go for Data Structures and Algorithms



```
[Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run arrays.go
printing elements 1
printing elements 2
printing elements 4
printing elements 5
printing elements 6
range 1
range 2
range 4
range 5
range 6
blank range 1
blank range 2
blank range 4
blank range 5
blank range 6
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```



```
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run basic_slice.go
Capacity 8
Length 5
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```



```
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run slices.go
new slice value 2
new slice value 6
new slice value 10
new slice value 12
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80×30
[Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run twodarray.go
[[0 0 0 0 0 0 0] [0 0 0 0 0 0 0] [0 0 0 0 0 0 0] [0 0 0 0 0 18 0] [0 0 0
0 0 0 0] [0 0 0 0 0 0 0] [0 0 0 0 0 0 0] [0 0 0 0 3 0 0]]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80×24
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run twodslices.go ]
[[0 0 0 0 0 0 0 0] [0 0 0 0 0 0 0 0] [0 0 0 0 0 0 0 0] [0 0 0 0 0 0 0 0]
[0 0 0 0 0 0 0 0] [0 0 0 0 0 0 0 0] [0 0 0 0 0 0 0 0]]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80×30
[Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run append_slice.go
slice1 [5 6 7]
slice2 [6 7 8 9]
slice3 [6 7 8 9 12]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80×30
[Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run maps.go ]
language 3 : English
language 4 : French
language 5 : Spanish
product with key 2 table
products map[2:table]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

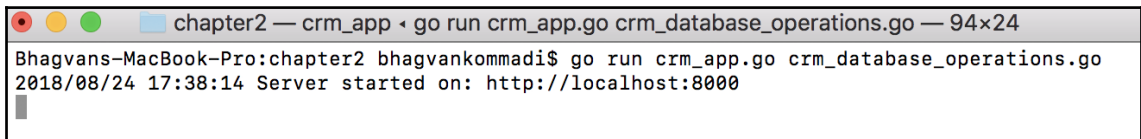
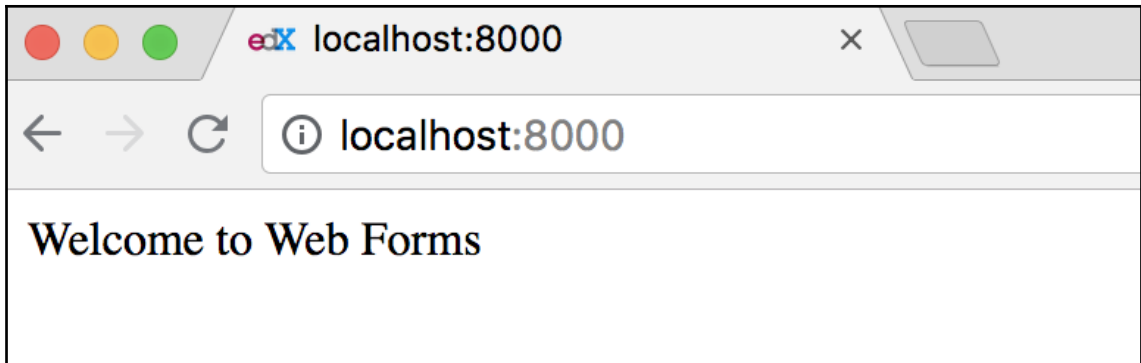
```
chapter2 — -bash — 80×24
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run database_operations.go
Customers [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {
4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80x30
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run database_operations.go
Before Insert [{8 Martin Rod 2376343} {6 Steve Rod 237343} {5 Michael Thompson 8834344} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
After Insert [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {5 Michael Thompson 8834344} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80x30
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run database_operations.go
Before Update [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {5 Michael Thompson 8834344} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
After Update [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {5 George Thompson 23233432} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — -bash — 80x30
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run database_operations.go
Before Delete [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {5 George Thompson 23233432} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
After Delete [{9 Arnie Smith 2386343} {8 Martin Rod 2376343} {6 Steve Rod 237343} {4 Jacob Martinez 23423232423} {1 John Smith 453454934}]
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$
```

```
chapter2 — webforms ◀ go run webforms.go — 80x24
Bhagvans-MacBook-Pro:chapter2 bhagvankommadi$ go run webforms.go
2018/08/24 17:30:02 Server started on: http://localhost:8000
```



CRM

localhost:8000

Customer Management- CRM

[Home](#) | [Create Customer](#)

Customers

Customer ID	Customer Name	SSN	View	Update	Delete
9	Arnie Smith	2386343	View	Update	Delete
8	Martin Rod	2376343	View	Update	Delete
6	Steve Rod	237343	View	Update	Delete
4	Jacob Martinez	23423232423	View	Update	Delete
1	John Smith	453454934	View	Update	Delete

[16]

Chapter 3: Linear Data Structures

```
Add To Head method
headNode is set to the currentNode 1
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankomadi$ go run linked_list.go
3
Bhagvans-MacBook-Pro:chapter3 bhagvankomadi$
```

```
Add To End method
linked list's lastNode property value 1
current node property value 5
lastNode's next node property value <nil>
lastNode's next node property value after adding the current node 5
```

```
Add After method
current node property value 7
linked list's Node with value equal to property 1
current node's next node property value <nil>
current node's next node property value after adding current node 5
linked list's Node with value equal to property's next Node after adding current node 5
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankomadi$ go run linked_list.go
3
1
7
5
Bhagvans-MacBook-Pro:chapter3 bhagvankomadi$
```

```
Node Between values method
Add To End method
first property 1
second property 5
node with property between values of firstProperty and secondProperty 7
```

```
Add To Head method
linked list's headNode property value 1
current node's property value 3
current node's next Node property value <nil>
current node's next Node set to headNode 1
linked list's headNode previous Node property value equal to currentNode property 1
linked list's headNode property value equal to current Node property 3
```

```
Add After method
current node property value 7
linked list's Node with value equal to property 1
current node's next node property value <nil>
current node's next node property value after adding current node 5
current node's previous node property value after adding current node 1
linked list's Node with value equal to property's next Node after adding current node 5
```

```
Add To End method
linked list's lastNode property value 1
current node property value 5
lastNode's next node property value <nil>
lastNode's next node property value after adding the current node 5
current node's previous node property value after setting to the current last node 1
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run doubly_linked_list.go
3
7
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

```
Add Element method
does the set have the element: false
set has the current element true
initial set &{map[1:true 2:true]}
true
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run set.go
&{map[1:true 2:true]}
true
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

```
Intersect method
intersect set does have the element false
Add Element method
does the set have the element: false
set has the current element true
after adding to the intersect set does have the element true
intersection of sets  &{map[2:true]}
```

```
Union method
Add Element method
does the set have the element: false
set has the current element true
adding element to union set 1
Add Element method
does the set have the element: false
set has the current element true
adding element to union set 2
Add Element method
adding element to union set 2
Add Element method
does the set have the element: false
set has the current element true
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run set.go
initial set &{map[1:true 2:true]}
true
another set &{map[1:true 2:true]}
intersection of sets  &{map[2:true]}
union of sets  &{map[1:true 2:true 4:true 5:true]}
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run tuples.go
16
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

```
Add method
before adding the order to the queue false
after adding the order to the queue false
```

```
chapter3 — -bash — 80x24
[apples-MacBook-Air:chapter3 bhagvan.kommadi$ go run queue.go
&{2 20 Computer Greg White}
&{1 10 Monitor John Smith}
apples-MacBook-Air:chapter3 bhagvan.kommadi$
```

```
chapter3 — sync_queue ◀ go run sync_queue.go — 80x24
apples-MacBook-Air:chapter3 bhagvan.kommadi$ go run sync_queue.go
&{0 0 false false 0xc4200780c0 0xc420078120 0xc420078060}
  Passenger starts
Ticket Issue starts
Ticket Issue ends
  Passenger ends
Ticket Issue starts
  Passenger starts
  Passenger ends
Ticket Issue ends
Ticket Issue starts
  Passenger starts
  Passenger ends
Ticket Issue ends
Ticket Issue starts
  Passenger starts
  Passenger ends
Ticket Issue ends
Ticket Issue starts
  Passenger starts
Ticket Issue ends

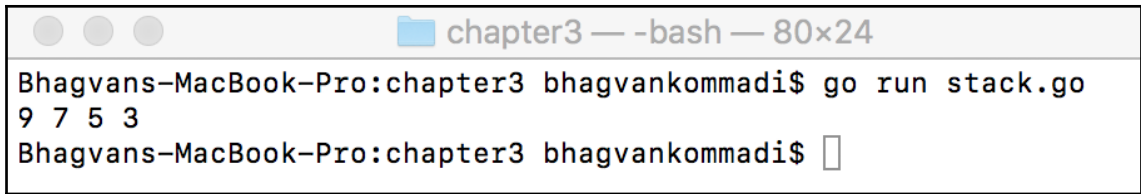
```

Push method

before appending the element with value 7 the element Count 2
after appending the element with value 7 the element Count 3

Pop method

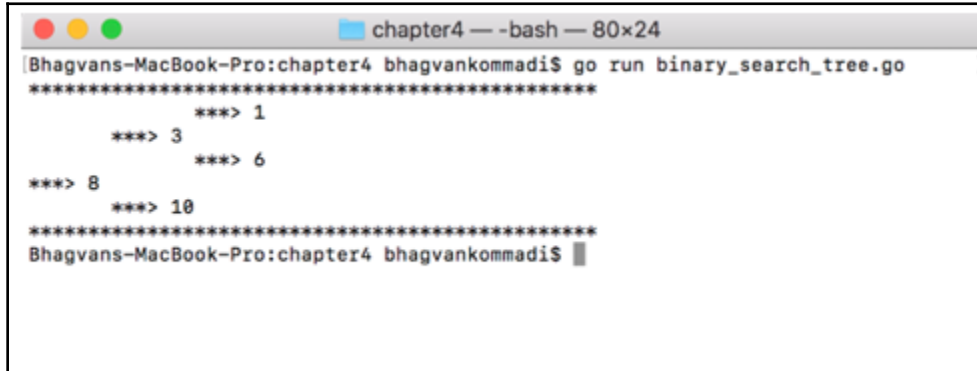
before removing the element with value 5 the element Count 2
after removing the element with value 5 the element Count 1



```
chapter3 — -bash — 80x24
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run stack.go
9 7 5 3
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

Chapter 4: Non-Linear Data Structures

```
insert element method key 3 value 3
insert TreeNode method rootNode 8 new Treenode 3
```



A terminal window titled "chapter4 — -bash — 80x24" showing the execution of a Go program. The prompt is "Bhagvans-MacBook-Pro:chapter4 bhagvankommadi\$". The command "go run binary_search_tree.go" is entered. The program outputs a series of prompts: "*****", "***> 1", "***> 3", "***> 6", "***> 8", and "***> 10". After the last input, it outputs "*****" and returns to the shell prompt "Bhagvans-MacBook-Pro:chapter4 bhagvankommadi\$".

```
Insert Node method
InsertRNode method rootnodekey 5 insert Node key 6
InsertRNode method rootnodekey 8 insert Node key 6
InsertRNode method rootnodekey 7 insert Node key 6
InsertRNode method rootnode nil insert Node key 6
balance Value -1
balance Value -2
Balance Tree method
```

```
inside Remove Node method
inside removeRNode method
inside removeRNode method
inside removeRNode method
rootNode balance value 1
```

```
chapter4 — -bash — 80x56
[apples-MacBook-Air:chapter4 bhagvan.kommadi$ go run avl_tree.go ]
Empty Tree:
null

Insert Tree:
{
  "KeyValue": 7,
  "BalanceValue": 0,
  "LinkedNodes": [
    {
      "KeyValue": 5,
      "BalanceValue": 0,
      "LinkedNodes": [
        {
          "KeyValue": 3,
          "BalanceValue": 0,
          "LinkedNodes": [
            null,
            null
          ]
        },
        {
          "KeyValue": 6,
          "BalanceValue": 0,
          "LinkedNodes": [
            null,
            null
          ]
        }
      ]
    },
    {
      "KeyValue": 8,
      "BalanceValue": 1,
      "LinkedNodes": [
        null,
        {
          "KeyValue": 10,
          "BalanceValue": 0,
          "LinkedNodes": [
            null,
            null
          ]
        }
      ]
    }
  ]
}

Remove Tree:
{
  "KeyValue": 6,
  "BalanceValue": 1,
  "LinkedNodes": [
    {
      "KeyValue": 5,
```

```
chapter4 — -bash — 80x24
[apples-MacBook-Air:chapter4 bhagvan.kommadi$ go run table.go
{{{1 323} {1 John Smith} {1 3453223}} 0} {{{2 223} {2 Curran Smith} {2 3223211}} 0}} Customer [Id Name SSN]}
Customer
Id 1 323
Name 1 John Smith
SSN 1 3453223
Id 2 223
Name 2 Curran Smith
SSN 2 3223211
apples-MacBook-Air:chapter4 bhagvan.kommadi$
```

```
chapter3 — -bash — 80x24
[Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$ go run circular_list.go
1,3,5,7,
1,7,5,3,
5,7,1,3,
Bhagvans-MacBook-Pro:chapter3 bhagvankommadi$
```

```
chapter4 — -bash — 80x24
[apples-MacBook-Air:chapter4 bhagvan.kommadi$ go run hash.go
6e541dd86cbb9b77cd17e4d48a4e9487d8d8dbbd506525341592f8bd16101d0
true
apples-MacBook-Air:chapter4 bhagvan.kommadi$
```

Chapter 5: Homogeneous Data Structures

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run row_matrix.go ]
[[1 2 3]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run column_matrix.go ]
[[1] [2] [3] [4]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run lower_triangular.go ]
[[1 0 0] [1 1 0] [2 1 1]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run upper_triangular.go ]
[[1 2 3] [0 1 4] [0 0 1]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run null_matrix.go ]
[[0 0 0] [0 0 0] [0 0 0]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
chapter5 — -bash — 80x24
[apples-MacBook-Air:chapter5 bhagvan.kommadi$ go run identity_matrix.go ]
[[1 0 0 0] [0 1 0 0] [0 0 1 0] [0 0 0 1]]
apples-MacBook-Air:chapter5 bhagvan.kommadi$
```

```
add method
adding matrix1 [[4 5] [1 2]] matrix2 [[6 7] [3 4]]
after addition - sum [[10 12] [4 6]]
[[10 12] [4 6]]
```

```
subtract method
difference of matrix1 [[4 5] [1 2]] and matrix2 [[6 7] [3 4]]
after subtraction - difference [[-2 -2] [-2 -2]]
[[-2 -2] [-2 -2]]
```

```
multiply method
product of matrix1 [[4 5] [1 2]] and matrix2 [[6 7] [3 4]]
after multiplication product [[39 48] [12 15]]
[[39 48] [12 15]]
```

```
chapter5 — -bash — 80x24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run twodmatrix.go
[[10 12] [4 6]]
[[-2 -2] [-2 -2]]
[[39 48] [12 15]]
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

```
chapter5 — -bash — 80x24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run zigzagmatrix.go
0 1 5 6 14
2 4 7 13 15
3 8 12 16 21
9 11 17 20 22
10 18 19 23 24
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

```
chapter5 — -bash — 80×24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run spiralmatrix.go ]
0  1  2  3  4
15 16 17 18  5
14 23 24 19  6
13 22 21 20  7
12 11 10  9  8
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

```
inside changeMatrix method
before initializing the elements to 1 if the row or column contains 1
100
000
000
after initializing the elements to 1 if the row or column contains 1
111
100
100
```

```
chapter5 — -bash — 80×24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run boolean_matrix.go
100
000
000
111
100
100
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

```
chapter5 — -bash — 80×24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run multidarray.go
[[[2 0] [2 2]] [[1 0] [1 2]]]
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

```
chapter5 — -bash — 80x24
[Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$ go run tensor.go ]
[[[2 0 2] [2 1 0] [1 2 1]] [[0 2 1] [0 2 1] [2 0 2]] [[2 2 2] [0 2 1] [0 1 1]]]
zero mode unfold
2 0 2
2 1 0
1 2 1
1-mode unfold
0 2 1
0 2 1
2 0 2
2-mode unfold
2 2 2
0 2 1
0 1 1
Bhagvans-MacBook-Pro:chapter5 bhagvankommadi$
```

Chapter 6: Heterogeneous Data Structures

```
Create Linked List method  
head Node after creation &{<nil> 97}  
head Node &{0xc00000e200 97}  
abcdefghijklmnopqrstuvwxyz
```

```
Reverse Linked List method  
after reverse &{0xc00000e370 122}  
zyxwvutsrqponmlkjihgfedcba  
apples-MacBook-Air:ch6 bhagvan.kommadi$
```

```
chapter6 — -bash — 80x24  
[apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run linked_list.go ]  
abcdefghijklmnopqrstuvwxyz  
zyxwvutsrqponmlkjihgfedcba  
apples-MacBook-Air:chapter6 bhagvan.kommadi$
```

```
chapter6 — -bash — 80x24  
apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run double_linked_list.go ]  
1  
5  
6  
14  
apples-MacBook-Air:chapter6 bhagvan.kommadi$
```

```
Add method element 1  
before adding queue [<nil> <nil> <nil> <nil> <nil> <nil>]  
after adding queue [1 <nil> <nil> <nil> <nil> <nil>]
```

```
chapter6 — -bash — 80x24  
[apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run circular_queue.go ]  
[1 2 3 4 5 <nil>]  
apples-MacBook-Air:chapter6 bhagvan.kommadi$
```

```

chapter6 — -bash — 80x24
[apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run sort_slice.go
[{"Graham 231 235643 31"} {"John 3434 245643 42"} {"Michael 8934 32432 17"} {"Jenny 243
34 32444 26"}]
[{"Michael 8934 32432 17"} {"Jenny 24334 32444 26"} {"Graham 231 235643 31"} {"John 343
4 245643 42"}]
[{"John 3434 245643 42"} {"Graham 231 235643 31"} {"Jenny 24334 32444 26"} {"Michael 89
34 32432 17"}]
apples-MacBook-Air:chapter6 bhagvan.kommadi$

```

```

chapter6 — -bash — 80x24
[apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run sort_keys.go
By name: [{"BrassPot 0.107 1.5 10000 -456"} {"CopperBowl 1 1 60 -30"} {"IronRod 0.055
0.4 3000 -180"} {"SteelChair 0.815 0.7 4000 -209"}]
By mass: [{"IronRod 0.055 0.4 3000 -180"} {"BrassPot 0.107 1.5 10000 -456"} {"SteelCh
air 0.815 0.7 4000 -209"} {"CopperBowl 1 1 60 -30"}]
By distance: [{"IronRod 0.055 0.4 3000 -180"} {"SteelChair 0.815 0.7 4000 -209"} {"Co
pperBowl 1 1 60 -30"} {"BrassPot 0.107 1.5 10000 -456"}]
By decreasing distance: [{"BrassPot 0.107 1.5 10000 -456"} {"CopperBowl 1 1 60 -30"}
{"SteelChair 0.815 0.7 4000 -209"} {"IronRod 0.055 0.4 3000 -180"}]
apples-MacBook-Air:chapter6 bhagvan.kommadi$

```

```

chapter6 — -bash — 80x24
[apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run sort_multi_keys.go
By username: [{"dan C++ 500"} {"fletcher Go 300"} {"hayvard Smalltalk 180"} {"james Jav
ascript 110"} {"john Go 500"} {"ray Go 400"} {"ritchie python 250"} {"sam Java 650"} {"wil
l Go 600"}]
By username,asc order [{"dan C++ 500"} {"fletcher Go 300"} {"hayvard Smalltalk 180"} {"
james Javascript 110"} {"john Go 500"} {"ray Go 400"} {"ritchie python 250"} {"sam Java
650"} {"will Go 600"}]
By username,desc order [{"dan C++ 500"} {"fletcher Go 300"} {"hayvard Smalltalk 180"}
{"james Javascript 110"} {"john Go 500"} {"ray Go 400"} {"ritchie python 250"} {"sam Java
650"} {"will Go 600"}]
By lang,asc order [{"dan C++ 500"} {"fletcher Go 300"} {"ray Go 400"} {"john Go 500"} {"w
ill Go 600"} {"sam Java 650"} {"james Javascript 110"} {"hayvard Smalltalk 180"} {"ritc
hie python 250"}]
By lang,desc order [{"dan C++ 500"} {"will Go 600"} {"john Go 500"} {"ray Go 400"} {"flet
cher Go 300"} {"sam Java 650"} {"james Javascript 110"} {"hayvard Smalltalk 180"} {"ritc
hie python 250"}]
apples-MacBook-Air:chapter6 bhagvan.kommadi$

```

```
chapter6 — -bash — 80x24
apples-MacBook-Air:chapter6 bhagvan.kommadi$ go run unordered_list.go
7
5
3
1
apples-MacBook-Air:chapter6 bhagvan.kommadi$
```

Chapter 7: Dynamic Data Structures

Put method key 1 value 1
before putting the element dictionary map[]
after putting the element dictionary map[1:1]

```
chapter7 — -bash — 80×24
[apples-MacBook-Air:chapter7 bhagvan.kommadi$ go run dictionary.go ]
&{map[1:1 2:2 3:3 4:4] {{0 0} 0 0 0 0}}
apples-MacBook-Air:chapter7 bhagvan.kommadi$
```

```
insert tree Node method tree Nodes [{8 8 <nil> <nil>} {3 3 <nil> <nil>} {10 10 <nil> <nil>} {1 1 <nil> <nil>} {6 6 <nil> <nil>}]
insert element method key 8 value 8
rootnode 8
insert element method key 3 value 3
insert TreeNode method rootNode 8 new Treenode 3
insert element method key 10 value 10
insert TreeNode method rootNode 8 new Treenode 10
insert element method key 1 value 1
insert TreeNode method rootNode 8 new Treenode 1
insert TreeNode method rootNode 3 new Treenode 1
insert element method key 6 value 6
insert TreeNode method rootNode 8 new Treenode 6
insert TreeNode method rootNode 3 new Treenode 6
```

```
chapter7 — -bash — 80×24
[apples-MacBook-Air:chapter7 bhagvan.kommadi$ go build treeset.go binarysearchtree.go ]
[apples-MacBook-Air:chapter7 bhagvan.kommadi$ ./treeset ]
*****
***> 1
***> 3
***> 6
***> 8
***> 10
*****
apples-MacBook-Air:chapter7 bhagvan.kommadi$
```



```
chapter7 — -bash — 80x29
apples-MacBook-Air:chapter7 bhagvan.kommadi$ go run farey_sequence.go
F(1): 0/1 1/1
F(2): 0/1 1/2 1/1
F(3): 0/1 1/3 1/2 2/3 1/1
F(4): 0/1 1/4 1/3 1/2 2/3 3/4 1/1
F(5): 0/1 1/5 1/4 1/3 2/5 1/2 3/5 2/3 3/4 4/5 1/1
F(6): 0/1 1/6 1/5 1/4 1/3 2/5 1/2 3/5 2/3 3/4 4/5 5/6 1/1
F(7): 0/1 1/7 1/6 1/5 1/4 2/7 1/3 2/5 3/7 1/2 4/7 3/5 2/3 5/7 3/4 4/5 5/6 6/7 1/1
F(8): 0/1 1/8 1/7 1/6 1/5 1/4 2/7 1/3 3/8 2/5 3/7 1/2 4/7 3/5 5/8 2/3 5/7 3/4 4/5 5/6 6/7 7/8 1/1
F(9): 0/1 1/9 1/8 1/7 1/6 1/5 2/9 1/4 2/7 1/3 3/8 2/5 3/7 4/9 1/2 5/9 4/7 3/5 5/8 2/3 5/7 3/4 7/9 4/5 5/6 6/7 7/8 8/9 1/1
F(10): 0/1 1/10 1/9 1/8 1/7 1/6 1/5 2/9 1/4 2/7 3/10 1/3 3/8 2/5 3/7 4/9 1/2 5/9 4/7 3/5 5/8 2/3 7/10 5/7 3/4 7/9 4/5 5/6 6/7 7/8 8/9 9/10 1/1
F(11): 0/1 1/11 1/10 1/9 1/8 1/7 1/6 2/11 1/5 2/9 1/4 3/11 2/7 3/10 1/3 4/11 3/8 2/5 3/7 4/9 5/11 1/2 6/11 5/9 4/7 3/5 5/8 7/11 2/3 7/10 5/7 8/11 3/4 7/9 4/5 9/11 5/6 6/7 7/8 8/9 9/10 10/11 1/1
|F(100)|: 3045
|F(200)|: 12233
|F(300)|: 27399
|F(400)|: 48679
|F(500)|: 76117
|F(600)|: 109501
|F(700)|: 149019
|F(800)|: 194751
|F(900)|: 246327
|F(1000)|: 304193
apples-MacBook-Air:chapter7 bhagvan.kommadi$
```

```
chapter7 — -bash — 83x28
apples-MacBook-Air:chapter7 bhagvan.kommadi$ go run fibonacci_sequence.go
0 1 1 2 3 5 8 13 21 34
0 1 1 2 3 5 8 13 21 34
apples-MacBook-Air:chapter7 bhagvan.kommadi$
```

```
chapter7 — -bash — 80×24
[apples-MacBook-Air:chapter7 bhagvan.kommadi$ go run look_say.go
1
11
21
1211
111221
312211
13112221
1113213211
31131211131221
apples-MacBook-Air:chapter7 bhagvan.kommadi$ ]
```

```
chapter7 — -bash — 80×24
[apples-MacBook-Air:chapter7 bhagvan.kommadi$ go run thue_morse.go
0
01
0110
01101001
0110100110010110
01101001100101101001011001101001
0110100110010110100101100110011001100110100110010110
apples-MacBook-Air:chapter7 bhagvan.kommadi$ ]
```

Chapter 8: Classic Algorithms

```
chapter8 — -bash — 80x43
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run bubble_sort.go
Bubble Sorter
[0 2 3 4 7 10 12 13 16 18 31]
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run selection_sort.go
Before Sorting [11 4 18 6 19 21 71 13 15 2]
After Sorting [2 4 6 11 13 15 18 19 21 71]
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run insertion_sort.go

^^^^^ Before Sorting ^^^

[162 -80 -274 -297 -565 -15 396 -329 -787 -50 -245 427 292 -903 -112 -492 603 3
73 76 281 -69 61 -73 -17]

--- After Sorting ---

[-903 -787 -565 -492 -329 -297 -274 -245 -112 -80 -73 -69 -50 -17 -15 61 76 162
281 292 373 396 427 603]

apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run shell_sort.go
[1 4 5 5 6 12 13 17 19 20 25 27 28 34 43 97 100 202 506 1000]
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run merge_sort.go]

Before Sorting

[39352 57110 -3150 12621 22464 -14792 -14706 2235 -23041 13456 19996 -62227 -10
89 54671 -17076 -11845 -30902 71964 35193 -56512 23260 -16191 6350 25010 -17747
-8953 -23844 -14690 -28506 22337 -5930 43571 37533 83694 -67673 -21766 2013 -152
14 74836 -15149]

-After Sorting

[-67673 -62227 -56512 -30902 -28506 -23844 -23041 -21766 -17747 -17076 -16191 -
15214 -15149 -14792 -14706 -14690 -11845 -8953 -5930 -3150 -1089 2013 2235 6350
12621 13456 19996 22337 22464 23260 25010 35193 37533 39352 43571 54671 57110 71
964 74836 83694]

apples-MacBook-Air:chapter8 bhagvan.kommadi$
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run quick_sort.go]
Enter Number of Elements: 10
array[0]: 34
array[1]: 3
array[2]: 6
array[3]: 14
array[4]: 21
array[5]: 28
array[6]: 87
array[7]: 56
array[8]: 45
array[9]: 34
Elements: [34 3 6 14 21 28 87 56 45 34]
Sorted Elements: [3 6 14 21 28 34 34 45 56 87]
apples-MacBook-Air:chapter8 bhagvan.kommadi$
```

```
chapter8 — -bash — 80x24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run linear_search.go]
true
apples-MacBook-Air:chapter8 bhagvan.kommadi$
```

```
chapter8 — -bash — 80×24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run binary_search.go
found element 36 at index 7 in [1 3 16 10 45 31 28 36 45 75]
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80×24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run interpolation_search.go
true found at 3
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80×37
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run recurse_factorial.go
Factorial of %d is %d 12 479001600
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

```
chapter8 — -bash — 80×24
[apples-MacBook-Air:chapter8 bhagvan.kommadi$ go run hash.go
cc6b831e2cf05c16a6b0f9c4c9e66b40677b9e7e
apples-MacBook-Air:chapter8 bhagvan.kommadi$ ]
```

Chapter 9: Network and Sparse Matrix Representation

```
chapter9 — -bash — 80x24
[apples-MacBook-Air:chapter9 bhagvan.kommadi$ go run social_graph.go
Printing all links from 0
Link: 0 -> 1 (1)
Link: 0 -> 2 (1)
Printing all links in graph.
Link: 0 -> 1 (1)
Link: 0 -> 2 (1)
Link: 1 -> 3 (1)
Link: 2 -> 4 (1)
apples-MacBook-Air:chapter9 bhagvan.kommadi$
```

```
test — -bash — 80x24
[apples-MacBook-Air:test bhagvan.kommadi$ go test -run NewSocialGraph -v
=== RUN    TestNewSocialGraph
--- PASS: TestNewSocialGraph (0.00s)
PASS
ok      _/Users/bhagvan.kommadi/desktop/packt/GoBook/Book/code/chapter9/test    0.007s
apples-MacBook-Air:test bhagvan.kommadi$
```

```
chapter9 — -bash — 80x24
[apples-MacBook-Air:chapter9 bhagvan.kommadi$ go run social_graph_example.go
Printing all links adjacent to %!(main.Name=Root)
Link: %!(main.Name=Root) -> %!(main.Name=John Smith)
Link: %!(main.Name=Root) -> %!(main.Name=Per Jambeck)
Link: %!(main.Name=Root) -> %!(main.Name=Cynthia Gibas)
Printing all links.
Link: %!(main.Name=Root) -> %!(main.Name=John Smith)
Link: %!(main.Name=Root) -> %!(main.Name=Per Jambeck)
Link: %!(main.Name=Root) -> %!(main.Name=Cynthia Gibas)
Link: %!(main.Name=John Smith) -> %!(main.Name=Mayo Smith)
Link: %!(main.Name=John Smith) -> %!(main.Name=Lorrie Jambeck)
Link: %!(main.Name=Per Jambeck) -> %!(main.Name=Ellie Vlocksen)
apples-MacBook-Air:chapter9 bhagvan.kommadi$
```

```
chapter9 — -bash — 80x24
[apples-MacBook-Air:chapter9 bhagvan.kommadi$ go run map_layout.go ]
Printing all links adjacent to Algeria
Link: Algeria -> Netherlands
Link: Algeria -> Korea
Link: Algeria -> Tunisia
Printing all links.
Link: Algeria -> Netherlands
Link: Algeria -> Korea
Link: Algeria -> Tunisia
Link: Korea -> Japan
Link: Korea -> Singapore
Link: Netherlands -> UAE
apples-MacBook-Air:chapter9 bhagvan.kommadi$
```

```
test — -bash — 80x24
[apples-MacBook-Air:test bhagvan.kommadi$ go test -run NewMapLayout -v ]
=== RUN    TestNewMapLayout
--- PASS: TestNewMapLayout (0.00s)
    main_test.go:17: &{map[] map[]}
PASS
ok      _/Users/bhagvan.kommadi/desktop/packit/GoBook/Book/code/chapter9/test    0.011s
apples-MacBook-Air:test bhagvan.kommadi$
```

```
chapter9 — -bash — 80x24
[apples-MacBook-Air:chapter9 bhagvan.kommadi$ go run knowledge_catalog.go ]
Printing all links adjacent to Car
Link: Car -> Tyre
Link: Car -> Door
Link: Car -> Hood
Printing all links.
Link: Car -> Tyre
Link: Car -> Door
Link: Car -> Hood
Link: Tyre -> Tube
Link: Tyre -> Axle
Link: Door -> handle
Link: Door -> Window Glass
apples-MacBook-Air:chapter9 bhagvan.kommadi$
```

```
test — -bash — 80×24
[apples-MacBook-Air:test bhagvan.kommadi$ go test -run NewKnowledgeGraph -v ]
=== RUN    TestNewKnowledgeGraph
--- PASS: TestNewKnowledgeGraph (0.00s)
    main_test.go:17: &{map[] map[]}
PASS
ok      _/Users/bhagvan.kommadi/desktop/packt/GoBook/Book/code/chapter9/test    0
.009s
apples-MacBook-Air:test bhagvan.kommadi$
```

```
chapter9 — -bash — 80×24
[apples-MacBook-Air:chapter9 bhagvan.kommadi$ go run sparse_matrix.go ]
&{[1 3 3] [1 1 2]} [3 3]}
2
apples-MacBook-Air:chapter9 bhagvan.kommadi$
```

Chapter 10: Memory Management

```
chapter10 — -bash — 117x29
[apples-MacBook-Air:chapter10 bhagvan.kommadi$ go run stack_garbage_collection.go ]
&{0xc42008401c 0xc420098100 0xc420084020} &{0xc420084014 0xc4200980c0 0xc420084018} &{0xc42008400c 0xc420098080 0xc420084010} &{0xc420084004 0xc420098040 0xc420084008}
apples-MacBook-Air:chapter10 bhagvan.kommadi$
```

```
chapter10 — -bash — 80x24
[apples-MacBook-Air:chapter10 bhagvan.kommadi$ go run reference_counting.go ]
1
apples-MacBook-Air:chapter10 bhagvan.kommadi$
```

```
chapter10 — -bash — 80x24
[apples-MacBook-Air:chapter10 bhagvan.kommadi$ go run cache_management.go ]
john smith
apples-MacBook-Air:chapter10 bhagvan.kommadi$
```

```
chapter10 — -bash — 80x24
apples-MacBook-Air:chapter10 bhagvan.kommadi$ go run stack_memory_allocation.go
value of number 17 Address of number 0xc420016058
added to num 18 Address of num 0xc420016068
value of number after adding One 17 Address of 0xc420016058
apples-MacBook-Air:chapter10 bhagvan.kommadi$
```

```
chapter10 — -bash — 117x29
[apples-MacBook-Air:chapter10 bhagvan.kommadi$ go run stack_memory_pointer.go ]
value of number 17 Address of number 0xc420016058
added to num 0xc420016058 Address of num 0xc42000c030 Value Points To 18
value of number after adding One 18 Address of 0xc420016058
apples-MacBook-Air:chapter10 bhagvan.kommadi$
```

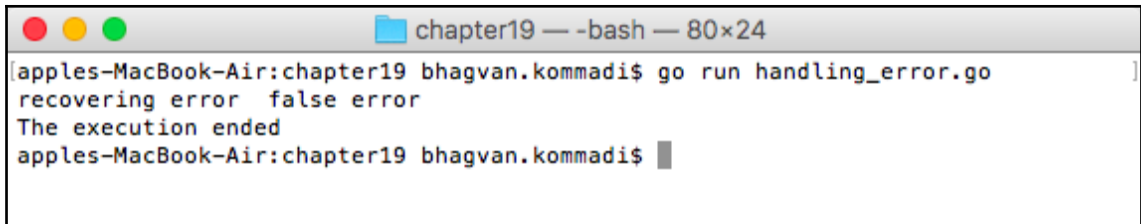
Appendix: Next Steps

```
chapter19 — -bash — 80x24
[apples-MacBook-Air:chapter19 bhagvan.kommadi$ go run chan_timeout.go ]
2019/01/25 20:28:40 delayTimeOut enter
2019/01/25 20:28:40 delayTimeOut exit
2019/01/25 20:28:40 data {}
2019/01/25 20:28:42 delayTimeOut enter
2019/01/25 20:28:43 delayTimeOut exit
2019/01/25 20:28:43 error delayTimeOut time out
apples-MacBook-Air:chapter19 bhagvan.kommadi$
```

```
chapter19 — -bash — 80x24
[apples-MacBook-Air:chapter19 bhagvan.kommadi$ go run context.go ]
2019/01/25 20:36:24 contex done
2019/01/25 20:36:24 contex end context deadline exceeded
2019/01/25 20:36:24 channel done
2019/01/25 20:36:24 channel end ch delay
apples-MacBook-Air:chapter19 bhagvan.kommadi$
```

```
chapter19 — -bash — 80x24
[apples-MacBook-Air:chapter19 bhagvan.kommadi$ go run log_linenumber.go ]
2019/02/02 18:57:41 log_linenumber.go:32: logging the time and flags
2019-02-02 18:57:41.932206 +0530 IST m=+0.000825210 main.method1 log_linenumber.
go 24
apples-MacBook-Air:chapter19 bhagvan.kommadi$
```

```
test — -bash — 80x24
[apples-MacBook-Air:test bhagvan.kommadi$ go test -run TestAddition -v ]
=== RUN TestAddition
--- FAIL: TestAddition (0.00s)
    table_test.go:28: 3 + 2 = 5, expected 1
FAIL
exit status 1
FAIL _/Users/bhagvan.kommadi/desktop/packt/GoBook/Book/Code/chapter19/test 0
.015s
apples-MacBook-Air:test bhagvan.kommadi$
```



```
[apples-MacBook-Air:chapter19 bhagvan.kommadi$ go run handling_error.go  
recovering error false error  
The execution ended  
apples-MacBook-Air:chapter19 bhagvan.kommadi$
```