

# Type Embedding



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# Type Embedding

- | Type embedding is a way to easily:
  - | Provide existing functionality to a new type
  - | Require a type to implement multiple interfaces

# Embedded Interfaces

- | Embedded interfaces allow you to "embed" an interface into another interface
  - | Implementing the interface requires all embedded functions to be implemented
  - | Reduces the need to write duplicate interface declarations
  - | Changes in embedded interfaces automatically propagate
    - | Easier to maintain codebase (compiler errors will indicate where updates should be made)



# Example

```
type Whisperer interface {  
    Whisper() string  
}
```

```
type Yeller interface {  
    Yell() string  
}
```

```
type Talker interface {  
    Whisperer  
    Yeller  
}
```

```
func talk(t Talker) {  
    fmt.Println(t.Yell())  
    fmt.Println(t.Whisper())  
}
```

# Embedded Structs

- | Embedded structs allow you to "embed" a struct into another struct
- | The struct will have access to all receiver functions and data of the embedded struct **at the top level**
  - | This is called field & method promotion
  - | Allows easy access of embedded struct data, without additional indirection

# Example

```
type Account struct {  
    accountId int  
    balance   int  
    name      string  
}
```

```
type ManagerAccount struct {  
    Account  
}
```

```
mgrAcct := ManagerAccount{Account{2, 30, "Cassandra"}}
```



# Promoted Fields & Methods

```
func (a *Account) GetBalance() int {  
    return a.balance  
}  
  
func (a Account) String() string {  
    return fmt.Sprintf("Standard (%v) $%v \"%v\"",  
        a.accountId,  
        a.balance,  
        a.name)  
}
```

```
func (m ManagerAccount) String() string {  
    return fmt.Sprintf("Manager (%v) $%v \"%v\"",  
        m.accountId,  
        m.balance,  
        m.name)  
}
```

```
type Account struct {  
    accountId int  
    balance   int  
    name      string  
}  
  
type ManagerAccount struct {  
    Account
```

```
mgrAcct := ManagerAccount{Account{2, 30, "Cassandra"}}  
fmt.Printf("%v\n", mgrAcct)  
fmt.Printf("%v\n", mgrAcct.GetBalance())  
fmt.Printf("%v\n", mgrAcct.accountId)
```

# Recap

- | Embedding interfaces allows multiple interfaces to be used as one
  - | Changes in embedded interfaces automatically propagate throughout codebase
- | Embedding structs promotes the embedded struct's fields and methods
  - | Easy access to inner struct fields
  - | Receiver functions sharing the same name as promoted method will override the promoted method