

```
1 package main
2
3 import (
4     "Lab5/models"
5     "log"
6     "net"
7     "net/rpc"
8     "os"
9 )
10
11 type Coordinator struct {
12     server1 *rpc.Client
13     server2 *rpc.Client
14 }
15
16 func (c *Coordinator) TransferMoney(req models.TransactionRequest, res
17 *models.TransactionResponse) error {
18     log.Printf("[Coordinator] Starting 2PC transaction: %s → %s, Amount:
19 %d", req.From, req.To, req.Amount)
20
21     fromServer := c.server1
22     toServer := c.server2
23
24     if req.From == "account_2" {
25         fromServer = c.server2
26         toServer = c.server1
27     }
28
29     // Phase 1: Prepare
30     log.Printf("[Coordinator] Requesting Prepare from %s", req.From)
31     err := fromServer.Call("Server.PrepareTransaction", req, res)
32     if err != nil || !res.Success {
33         log.Printf("[Coordinator] ERROR: Prepare failed for %s,
34 rolling back ... ", req.From)
35         fromServer.Call("Server.RollbackTransaction", req, res)
36         return err
37     }
38
39     log.Printf("[Coordinator] Requesting Prepare from %s", req.To)
40     err = toServer.Call("Server.PrepareTransaction", req, res)
41     if err != nil || !res.Success {
42         log.Printf("[Coordinator] ERROR: Prepare failed for %s,
43 rolling back ... ", req.To)
44         fromServer.Call("Server.RollbackTransaction", req, res)
45         toServer.Call("Server.RollbackTransaction", req, res)
46         return err
47     }
48
49     // Phase 2: Commit
50     log.Printf("[Coordinator] Requesting Commit from %s", req.From)
51     err = fromServer.Call("Server.CommitTransaction", req, res)
52     if err != nil || !res.Success {
```

```
49         log.Printf("[Coordinator] ERROR: Commit failed for %s,
rolling back...", req.From)
50         toServer.Call("Server.RollbackTransaction", req, res)
51         return err
52     }
53
54     log.Printf("[Coordinator] Requesting Commit from %s", req.To)
55     err = toServer.Call("Server.CommitTransaction", req, res)
56     if err != nil || !res.Success {
57         log.Printf("[Coordinator] ERROR: Commit failed for %s,
rolling back...", req.To)
58         fromServer.Call("Server.RollbackTransaction", req, res)
59         return err
60     }
61
62     log.Printf("[Coordinator] SUCCESS: Transaction completed!")
63     return nil
64 }
65
66 func startCoordinator(server1Addr, server2Addr, port string) {
67     server1, err := rpc.Dial("tcp", server1Addr)
68     if err != nil {
69         log.Fatalf("Failed to connect to server1: %v", err)
70     }
71
72     server2, err := rpc.Dial("tcp", server2Addr)
73     if err != nil {
74         log.Fatalf("Failed to connect to server2: %v", err)
75     }
76
77     coordinator := &Coordinator{
78         server1: server1,
79         server2: server2,
80     }
81
82     rpcServer := rpc.NewServer()
83     rpcServer.Register(coordinator)
84
85     listener, err := net.Listen("tcp", ":"+port)
86     if err != nil {
87         log.Fatalf("Failed to start coordinator: %v", err)
88     }
89
90     log.Printf("[Coordinator] Running on port %s", port)
91     for {
92         conn, err := listener.Accept()
93         if err != nil {
94             log.Println("[Coordinator] Connection error:", err)
95             continue
96         }
97         go rpcServer.ServeConn(conn)
98     }
99 }
100
101 func main() {
```

```
102         if len(os.Args) < 4 {
103             log.Fatalf("Usage: go run coordinator.go <server1_addr>
104             <server2_addr> <port>")
105         }
106
107         server1Addr := os.Args[1]
108         server2Addr := os.Args[2]
109         port := os.Args[3]
110
111         startCoordinator(server1Addr, server2Addr, port)
112     }
```