

## Security systems in a bank

```

classDiagram
    class Session {
        -sessionID: int
        -sessionDuration: int
        +checkIsActive(): bool
        +getSessionDuration(): int
    }
    class LoginHistory {
        -dateLogin: string
        -dateLogout: string
        +getDateLogin(): string
        +getDateLogout(): string
    }
    class Authentication {
        -authenticationToken: string
        +authenticate(clientLogin: string, clientPassword: string)
        +authenticateWithToken(authenticationToken: string)
    }
    class Authorization {
        -loginAttempts: int
        -authorizationToken: string
        -recentActivity: string
        +authorize(clientLogin: string, clientPassword: string)
        +authorizeWithToken(authenticationToken: string)
        +getLoginAttempts(): int
        +getRecentActivity(): string
    }
    class SecuritySystem {
        -sessionToken: string
        -attemptsLeft: int
        +generateTokenForSession(): void
        +decreaseAttemptsLeft(): void
    }
    class Log {
        -message: string
        -dateTime: string
        +getMessage(): string
        +getDateTime(): string
    }
    class Role {
        -roleName: string
        -permissions: string
        +getRoleName(): string
        +addPermission(permission: string)
        +getPermission(): string
    }
    class Branch {
        +branchName: string
        -branchID
        +addEmployee(employee: Employee)
        +removeEmployee(employee: Employee)
    }
    class Employee {
        -employeeID: int
        -employeePassword: string
        +signIn(employeeID: int, employeePassword: string)
        +signOut(): void
    }
    class Bank {
        +name: string
        +address: string
        +currency: string
        +exchangeRate: string
        -employeeList: string
        -accountList: string
        +convertCurrency(): float
        +changeCurrencyExchangeRate(currency: string, exchangeRate: string)
    }
    class Account {
        -accountNumber: int
        -balance: float
        +checkBalance(): float
    }
    class Transaction {
        -transactionID: int
        -transactionDate: string
        +approve(): bool
        +cancel(): bool
    }
    class Client {
        -clientLogin: string
        -clientPassword: string
        +login(clientLogin: string, clientPassword: string)
        +logout(): void
    }
    class Password {
        -clientPasswordHash: string
        -employeePasswordHash: string
        +checkClientPassword(clientPassword: string)
        +checkEmployeePassword(employeePassword: string)
    }
    class Person {
        -firstName: string
        -surname: string
        -personalIdentityNumber: string
        +changeData(firstName: string, surname: string, personalIdentityNumber: string)
    }

    Session o-- LoginHistory
    Session --> Authentication
    Authentication ..> Authorization
    Authentication --> SecuritySystem
    SecuritySystem --> Log
    SecuritySystem --> Role
    SecuritySystem --> Employee
    SecuritySystem --> Bank
    SecuritySystem --> Account
    SecuritySystem --> Client
    SecuritySystem --> Password
    SecuritySystem --> Person
    Role o-- Employee
    Branch o-- Employee
    Bank --> Account
    Bank --> Client
    Bank --> Password
    Account --> Transaction
    Client --> Password
    Person --> Password
    Person --> Person
    
```

## 2. Activity diagram

