

DESIGN JUSTIFICATION FOR MONEY MANAGEMENT SOFTWARE

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MODULES

- Login/SignUp
 - Login function
 - SignUp function
- Create Budget
 - Get time period function
 - Create Category function
 - Generate budget function
- Register Transaction
 - Register Transaction function
- Credit/Debit Transaction
 - Register credit function
 - Register debit function
- Coupons
 - Add coupon function
 - Use coupon function
- Statistics
 - Display Budget Statistics function
 - Display credit/debit Statistics function
- Export Data
 - Export Data function

COHESION

- Logical Cohesion
 - Login/SignUp
 - Login and SignUp functions both perform the task of authenticating the user credentials, but SignUp function also registers a new user, so they are completely different functionally.
 - Credit/Debit
 - Register credit and Register debit functions perform the similar task of registering a credit or debit transaction.
 - Statistics
 - Display Budget Statistics and Display credit/debit statistics functions perform the similar task of taking data from data store and displaying various graphs for the data.

- **Temporal Cohesion**

- Create Budget
 - Get time period, Create Category and Create budget functions are all performed in the same time span to initialize a single budget.

- **Procedural/Functional Cohesion**

- Create Budget
 - All the functions under this module are part of the same procedure of creating a new budget. Hence there is Procedural Cohesion.

- **Communication Cohesion**

- Login/SignUp
 - Both Login and SignUp functions use and update data from the same data store.
- Create Budget
 - All the functions of the module add data in the same 'budget' data structure.
- Credit/Debit Transaction
 - Register credit function and register debit function add data in the same data store.
- Coupons
 - Add a coupon function and Use a coupon function update data in the same data store.

- **Sequential Cohesion**

- Create Budget
 - Outputs of Get time period function and Create Category function are essentially used by Generate Budget function as input to create the final budget.

NOTE: Since Register Transaction and Export Data modules consist of a single function, there is no scope for cohesion in these modules.

COUPLING

- **Data Coupling**

- The Login/SignUp module communicates with other modules by providing them UserID.
- Export Data module gets data from all other modules, except Statistics module, to export user data.

- Statistics module communicates with Budget data store and Credit/Debit data store in Create Budget and Credit/Debit Transactions modules respectively.
- **Control Coupling**
 - Control coupling is not present among any of the modules.
- **Content Coupling**
 - Content coupling is absent in our design.

SUMMARY

To achieve a balance between cohesion and coupling, we tried to make sure that related parts of the code are in the same module. As a rule of thumb, we made sure that we are always able to summarize the purpose of a single module in a single phrase. We also tried to keep each module as independent of others as possible in such a way that they interact in a minimal way. But on the other hand, we couldn't go totally overboard by making everything a separate module as it would have had a dramatic effect on the number of dependencies between modules, and therefore would have resulted in large coupling.

High cohesion means keeping parts of a code base that are related to each other in a single place. Low coupling, at the same time, is about separating unrelated parts of the code base as much as possible, and we tried to design in a way that achieves both and strikes a balance.

Since our design has incorporated all types of cohesion, we can say that it is a design with somewhat high cohesion, and since Control and Content coupling is absent from the design, it can be said to have considerably low coupling.