**SQL Queries for Personal Budget Analysis**

**1. Query:**

*SELECT Category, SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Category;*

**Explanation**: This groups the data by Category and sums the Spent\_Amount for each category to show total expenditures.

**2. Query:**

*SELECT Category, Budget\_Amount, SUM(Spent\_Amount) AS Total\_Spent,*

*(Budget\_Amount - SUM(Spent\_Amount)) AS Remaining\_Budget*

*FROM personal\_budget*

*GROUP BY Category, Budget\_Amount*

*HAVING SUM(Spent\_Amount) > Budget\_Amount;*

**Explanation**: This groups by Category and filters to show only those categories where the total spent exceeds the budgeted amount.

**3. Query:**

*SELECT DATE\_FORMAT(Transaction\_Date, '%Y-%m') AS Month,*

*SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Month*

*ORDER BY Month;*

**Explanation**: This formats the Transaction\_Date to extract the month and year, grouping the total spent by month for analysis.

**4. Query:**

*SELECT SUM(Budget\_Amount) AS Total\_Budget,*

*SUM(Spent\_Amount) AS Total\_Spent,*

*(SUM(Budget\_Amount) - SUM(Spent\_Amount)) AS Overall\_Balance*

*FROM personal\_budget;*

**Explanation**: This provides a high-level overview of overall budget versus spending.

**5. Query:**

*SELECT Vendor, SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Vendor*

*ORDER BY Total\_Spent DESC*

*LIMIT 5;*

**Explanation**: This groups the spending by Vendor, summing it up, and then orders it to show the top 5 vendors by total spending.

**6. Query:**

*SELECT YEAR(Transaction\_Date) AS Year,*

*WEEK(Transaction\_Date) AS Week,*

*SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Year, Week*

*ORDER BY Year, Week;*

**Explanation**: This provides insight into spending trends over weeks, helping you visualize how spending patterns change over time.

**7. Query:**

*SELECT Account\_Type, AVG(Spent\_Amount) AS Average\_Spent*

*FROM personal\_budget*

*GROUP BY Account\_Type;*

**Explanation**: This groups the data by Account\_Type and calculates the average spending for each type.

**8. Query:**

*SELECT \**

*FROM personal\_budget*

*ORDER BY Transaction\_Date DESC*

*LIMIT 10;*

**Explanation**: This orders the transactions by date in descending order to show the latest ones.

**9. Query:**

*SELECT Category, Budget\_Amount, SUM(Spent\_Amount) AS Total\_Spent,*

*(SUM(Spent\_Amount) / Budget\_Amount \* 100) AS Utilization\_Percentage*

*FROM personal\_budget*

*GROUP BY Category, Budget\_Amount*

*ORDER BY Utilization\_Percentage DESC;*

**Explanation**: This calculates the utilization percentage by dividing the total spent by the budget amount for each category.

**10. Query:**

*SELECT Category, SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Category*

*ORDER BY Total\_Spent ASC*

*LIMIT 5;*

**Explanation**: This groups by category, sums the spending, and orders the results to show the least spent categories.

**11. Query:**

*SELECT \**

*FROM personal\_budget*

*WHERE Transaction\_Date BETWEEN '2024-01-01' AND '2024-02-01'*

*ORDER BY Transaction\_Date;*

**Explanation**: Adjust the dates in the BETWEEN clause to filter transactions for the desired period.

**12. Query:**

*SELECT Account\_Type, SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Account\_Type*

*HAVING SUM(Spent\_Amount) > 0*

*ORDER BY Total\_Spent DESC;*

**Explanation**: This sums the spending per account type and filters to show only those with positive spending.

**13. Query:**

*SELECT Category, COUNT(Transaction\_ID) AS Transaction\_Count*

*FROM personal\_budget*

*GROUP BY Category;*

**Explanation**: This counts the number of transactions for each category, helping to understand how often each category is being used.

**14. Query:**

*SELECT Vendor, COUNT(Transaction\_ID) AS Transaction\_Count*

*FROM personal\_budget*

*GROUP BY Vendor*

*HAVING COUNT(Transaction\_ID) > 1;*

**Explanation**: This groups the data by vendor and counts the number of transactions, filtering to show only vendors with more than one transaction.

**15. Query:**

*SELECT \**

*FROM personal\_budget*

*ORDER BY Spent\_Amount DESC*

*LIMIT 1;*

**Explanation**: This orders the transactions by the Spent\_Amount in descending order, limiting to the top result to find the highest single expenditure.

**16. Query:**

*SELECT YEAR(Transaction\_Date) AS Year,*

*SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Year*

*ORDER BY Year;*

**Explanation**: This aggregates total spending by year, helping to visualize spending trends over time.

**17. Query:**

*SELECT AVG(Balance) AS Average\_Balance,*

*MAX(Balance) AS Maximum\_Balance,*

*MIN(Balance) AS Minimum\_Balance*

*FROM personal\_budget;*

**Explanation**: This provides insights into how balances fluctuate over the dataset.

**18. Query:**

*SELECT (SUM(Spent\_Amount) / SUM(Budget\_Amount) \* 100) AS Total\_Utilization\_Percentage*

*FROM personal\_budget;*

**Explanation**: This calculates the overall percentage of the budget that has been spent across all categories.

**19. Query:**

*WITH Monthly\_Spending AS (*

*SELECT*

*DATE\_FORMAT(Transaction\_Date, '%Y-%m') AS Month,*

*Category,*

*SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Month, Category*

*)*

*SELECT Month, Category, Total\_Spent*

*FROM (*

*SELECT Month, Category, Total\_Spent,*

*ROW\_NUMBER() OVER (PARTITION BY Month ORDER BY Total\_Spent DESC) AS Rank*

*FROM Monthly\_Spending*

*) AS Ranked*

*WHERE Rank <= 3;*

**Explanation**: This uses a Common Table Expression (CTE) to first calculate monthly spending by category, then ranks them to find the top 3 for each month.

**20. Query:**

*SELECT Month, Category, SUM(Spent\_Amount) AS Total\_Spent*

*FROM personal\_budget*

*GROUP BY Month, Category*

*ORDER BY Month, Category;*

**Explanation**: This summarizes spending over months, allowing you to visualize how expenditures change over time.

**21. Query:**

*SELECT Category,*

*AVG(Spent\_Amount) AS Average\_Spent,*

*STDDEV(Spent\_Amount) AS Spending\_Standard\_Deviation*

*FROM personal\_budget*

*GROUP BY Category*

*HAVING STDDEV(Spent\_Amount) > 200;*

**Explanation**: This calculates the standard deviation of spending for each category, helping to identify categories with highly inconsistent spending patterns.

**22. Query:**

*WITH Monthly\_Balance AS (*

*SELECT*

*DATE\_FORMAT(Transaction\_Date, '%Y-%m') AS Month,*

*SUM(Balance) AS Total\_Balance*

*FROM personal\_budget*

*GROUP BY Month*

*)*

*SELECT Month, Total\_Balance,*

*CASE*

*WHEN Total\_Balance > 0 THEN 'Positive'*

*WHEN Total\_Balance < 0 THEN 'Negative'*

*ELSE 'Zero'*

*END AS Balance\_Status*

*FROM Monthly\_Balance*

*ORDER BY Month;*

**Explanation**: This calculates the total balance per month and categorizes the balance status as Positive, Negative, or Zero.