**INSTITUTE LEVEL SIMPLE PROJECTS**

**1. Student Marks Management System (4)**

* **Description**: Manage student records with their marks.
* **Features**:
  + Input student details (name, roll number, and marks).
  + Calculate and display total marks and average using functions.
* **Concepts Used**: Functions, arrays, loops.

**2. Simple Calculator (9)**

* **Description**: Perform basic arithmetic operations.
* **Features**:
  + Input two numbers and an operator.
  + Use separate functions for addition, subtraction, multiplication, and division.
* **Concepts Used**: Functions, conditional statements.

**3. Electricity Bill Calculator (1)**

* **Description**: Calculate electricity bills based on units consumed.
* **Features**:
  + Define rate slabs for different unit ranges.
  + Use a function to compute the total bill.
* **Concepts Used**: Functions, conditional statements.

**4. Number Guessing Game (3)**

* **Description**: A simple guessing game where the user guesses a random number.
* **Features**:
  + Use a function to check if the guess is correct.
  + Limit attempts and provide feedback for each guess.
* **Concepts Used**: Functions, random numbers, loops.

**5. Library Book Management (2)**

* **Description**: Manage a collection of books in a library.
* **Features**:
  + Functions to add books, search books by title, and display all books.
* **Concepts Used**: Functions, arrays of strings.

**6. Tic-Tac-Toe Game (8)**

* **Description**: Create a 2-player Tic-Tac-Toe game.
* **Features**:
  + Functions to display the board, make a move, and check for a winner or draw.
* **Concepts Used**: Functions, arrays, loops.

**7. Bank Account Management (7)**

* **Description**: Simulate simple banking operations.
* **Features**:
  + Use functions to check balance, deposit, and withdraw money.
  + Validate operations like sufficient balance for withdrawals.
* **Concepts Used**: Functions, loops, conditional statements.

**8. Quiz Game (6)**

* **Description**: A simple quiz game with multiple-choice questions.
* **Features**:
  + Use functions to display questions and calculate the score.
  + Include a minimum of 5 questions.
* **Concepts Used**: Functions, arrays.

**9. Mini ATM System (5)**

* **Description**: Simulate an ATM for basic operations.
* **Features**:
  + Use functions to perform withdrawals, deposits, and balance checks.
  + Display transaction history.
* **Concepts Used**: Functions, loops, and conditional statements.

**10. Vowel Counter (13)**

* **Description**: Count the number of vowels in a given string.
* **Features**:
  + Use a function to iterate through a string and count vowels.
  + Display the total count.
* **Concepts Used**: Functions, strings, loops.

**11. Password Strength Checker (12)**

* **Description**: Check the strength of a user-provided password.
* **Features**:
  + Use a function to verify password requirements:
    - Length (minimum 8 characters).
    - Contains uppercase, lowercase, numbers, and special characters.
  + Display if the password is "Weak," "Moderate," or "Strong."
* **Concepts Used**: Functions, strings, loops, conditional statements.

**12. Character Frequency Counter (11)**

* **Description**: Count the frequency of each character in a string.
* **Features**:
  + Use a function to process the string and count characters.
  + Display results for each character.
* **Concepts Used**: Functions, arrays, loops.

**13. Pattern Generator (10)**

* **Description**: Generate and display different patterns (e.g., triangles, pyramids).
* **Features**:
  + Use functions to generate patterns like:
    - Right-angled triangle
    - Pyramid
    - Diamond shape
  + Allow the user to select the pattern type.
* **Concepts Used**: Functions, loops, conditional statements.