**Project Title:** Crowdsale Contract

**Expanded Description:**

A Crowdsale contract enables you to raise funds (typically Ether) by selling your newly created ERC-20 tokens to contributors. The contract sets a predetermined exchange rate, specifying how many tokens a contributor receives for each unit of Ether they send. Crowdsales can have different structures and rules, such as time-limited sales, bonuses for early contributors, or investment caps.

**Project Requirements:**

1. **Token Integration:**
   * Your Crowdsale contract must be compatible with the ERC-20 token you created in the previous project. It should be able to manage the token's distribution to contributors.
2. **Core Crowdsale Functionality:**
   * **Rate:** The number of tokens received for each Ether contributed (e.g., 1 ETH = 1000 MYT).
   * **Wallet:** The Ethereum address that will receive the contributed Ether.
   * **Start and End Times:** Define the period during which contributions are accepted.
   * **Hard Cap (Optional):** Set a maximum fundraising goal. If reached, the Crowdsale ends.
3. **Additional Features (Optional):**
   * **Token Vesting:** Release tokens to contributors gradually over time.
   * **Whitelist:** Restrict participation to pre-approved addresses.
   * **Referral Bonuses:** Incentivize users to invite others.
4. **Functions:**
   * buyTokens(address beneficiary): Allows users to contribute Ether and receive tokens.
   * hasEnded(): Checks if the Crowdsale period has ended.
   * Other functions for managing the Crowdsale (e.g., withdrawing funds, adjusting rates, etc.).
5. **Events:**
   * TokenPurchase(address indexed purchaser, address indexed beneficiary, uint256 value, uint256 amount): Emitted when tokens are purchased.

**Technical Resources Needed:**

* **IDE:** Remix or Visual Studio Code (as in the previous project).
* **Ethereum Wallet:** MetaMask.
* **Ethereum Client:** A test network like Goerli or Sepolia.
* **OpenZeppelin Contracts:** Utilize their Crowdsale contracts (Crowdsale, TimedCrowdsale, etc.) and potentially their ERC-20 implementation from the previous project.

**Timeline (Estimated):**

* **Research Crowdsale Concepts & OpenZeppelin Contracts:** 1-2 days
* **Contract Implementation:** 2-3 days
* **Testing and Deployment on a Testnet:** 1-2 days
* **Total:** 4-7 days

**Additional Tips:**

* **OpenZeppelin is Your Friend:** Make extensive use of OpenZeppelin's battle-tested Crowdsale contracts to ensure security and best practices.
* **Keep It Simple at First:** Start with a basic Crowdsale and then add more advanced features as you gain confidence.
* **Think About Security:** Consider potential vulnerabilities like reentrancy attacks and take steps to mitigate them.
* **Test, Test, Test:** Write thorough unit tests to ensure your Crowdsale functions as expected.

Let me know when you're ready to move on to the next project!