

# **Blockchain for Industrial Engineers: Decentralized Application Development**

**บล็อกเชนสำหรับวิศวกรอุตสาหกรรม: การพัฒนาแอปพลิเคชันแบบ  
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# **Auction (Continued)**

**Cancel the auction**

# Withdrawal pattern

- You should not send back back the fund to users that did not win the auction.
  - Use **withdrawal pattern** instead.
- You should send ETH to a user who requests it.
- This avoids **re-entrance attacks**.

# Re-entrance attack

- Reentrancy attack in Solidity repeatedly withdraws funds from a smart contract and transfers them to an unauthorized contract until the funds have been exhausted.

# Contract factory pattern

- Instead of directly creating instances of objects
  - you have a single object (the factory) that does it for you.
- Benefits
  - Deployments of multiple contracts with high gas-efficiency
  - Keep track of all deployed contracts
  - Save gas on multiple contract deployments