Homework 3 & 4 comments

Common Compile Errors/Warnings
- Compile errors: Missing semicolon; {}, ()
- Warnings:
  - Variables declared but not used
  - return statement within a loop (within a function)

    while(condition1){
      ...
      if(condition2){
        return something;
      }
    }

    while(condition1){
      ...
      if(condition2){
        return something1;
      }
    }

    return something2;

Another solution

boolean answer = false; //can be true depending on what // you are trying to achieve

while(condition1) {
  if(condition2){
    answer = true;
    break;
  }
}

return answer;

Testing

- Try to break your program, that is the only way you know it will work
- Especially corner cases
- Always think of bad inputs even if we tell you that you will not have to deal with
  - This provides sanity if you are using the piece code somewhere else
Efficiency

- It shows that you did not test your program for valid cases either
  - Large numbers can cause overflow problem
  - Take long time to give the answer

Efficiency hw3: Execution Time with Smug Numbers

- Large numbers can cause overflow problem
- Take long time to give the answer

Differences in approaches

Solution 1
- Checks more numbers than necessary
  - Invalid combinations
- Checks each pair of numbers twice
- Slower
  - Inner loops goes n times
  - Outer loops goes n times
  - \( n \times n \) operations

Solution 2
- Uses code we already have
- Exploits natural symmetry in problem
- Faster
  - For number \( n \), we do \( \sqrt{n} \) operations (add/sub) to see if number is a square.
  - We loop \( n \) times, so we do \( n \times \sqrt{n} \) operations

Efficiency for hw4

- receive_message
  - Can call receive_packet atmost 32760 times

- Inefficient approach
  - Wait for the packets in order

- Efficient approach
  - Start building the message from the packet
  - Also do some book-keeping i.e. mark the packet as seen
Common mistake in Hw4

- Not checking array length in `get_data_from_user()`
- Must check is loop counter is less than `MAX_MESSAGE_LEN`

Style Rules

- Use comments
  - So you can come back and see what you have done
- Variable names
  - Make descriptive name
    - E.g. sum, product, happy
    - x, i, y are ok to use as loop increment variables
- Indentation
  - Makes the code cleaner
  - Almost like formatting an essay