Cheating at Games

- **When you play solitaire, does the computer cheat?**
  - ➤ **What would this mean?**
- **When you play chess, who wins?**
  - ➤ **Computer? You?**
- **When you play Poker?**
  - ➤ pokerstars.net
  - ➤ pokerstars.com

- **Hangman???**

IBM Watson

http: After Watson

Watson was optimized to tackle a specific challenge: competing against the world's best Jeopardy! contestants

WATSON

Beyond Jeopardy!, the IBM team is working to deploy this technology across industries such as healthcare, finance and customer service.

Computer cheats at Hangman?

- **This is not allowed: user guesses 't'**
  - ➤ **Computer says 'no occurrence of t'**
  - ➤ **Later secret word is 'chocolate'**

- **This is allowed: user guesses 't' knowing that word is six letters with third letter 'r': _ _ r _ _ _**
  - ➤ **Computer's secret word is 'street'**
  - ➤ **Computer says 'no occurrence of t'**
    - • Changes secret word to 'person'
  - ➤ **Why is this ok?**

How to program cheating game?

- **Suppose the possible words are those here:**
- **["OBOE", "NOON", "ODOR", "ROOM", "TRIP", "SOLO", "PICK", "FRAT", "HOOP"]**
- **What happens if player guesses 'O' as the very first guess?**
  - ➤ **What should computer's secret word be?**

- **["OBOE", "ODOR"] is an *equivalence class***
- **["NOON", "ROOM", "HOOP"] is too**
- **What about words with no O's?**

Aside: Help in debugging programs

- **Often very useful to print information**
  - ➢ **Contents of list, set, dictionary, ...**
  - ➢ **After computer winnows possible words?**
  - ➢ **After computer creates dictionary?**

- **We don't want debugging/print statements in released (final) code**

```
if _DEBUG:
    for key in d:
        print key,d[key]
```

How do we use global _DEBUG?

- **If it's a global variable we don't need to declare it when we use it in a function when ...**
  - ➢ **If we write/change global variable must declare**
  - ➢ **If we read/access, don't need to declare**

- **Sometimes useful to create print/debug function**

```
def debug(info):
    if _DEBUG:
        print info

debug("%s has len %d" % (key, d[key]) )
```