

COMP20005 Workshop Week 11

1

Assignment2 Q&A

2

Working on your assignment 2, OR

Do exercises from chapters 9:

Ex. 9.03 (simulation with Poker Hands)

(**9.6, 9.7, 9.8, 9.9, 9.11**) if you are 100% sure that you have submitted a perfect work for assignment 2.

Strategy: Simulation

Simulate what done manually
Simulate physical processes

E 9.03: How to apply simulation here?

Write a program that deals four random five-card poker hands from a standard 52-card deck. You need to implement a suitable "shuffling" mechanism, and ensure that the same card does not get dealt twice. For example:

```
player 1: 3-S, Ac-C, Qu-D, 4-H, Qu-H  
player 2: 10-C, 2-H, 5-H, 10-H, Ki-H  
player 3: 2-C, 6-D, 10-D, Ki-D, 9-H  
player 4: 8-S, 9-S, 10-S, Qu-S, 4-D
```

Then modify your program to allow you to estimate the probability that a player in a four-person poker game obtains a simple pair (two cards with the same face value in different suits) in their initial hand. Compute your estimate using 40,000 hands dealt from 10,000 shuffled decks.

How about three of a kind (three cards of the same face value)?

And a full house (three of a kind plus a pair with the other two cards)?

e9.3: let's simulate a game

```
#define FACES      13
#define SUITS      4
#define CARDS (FACES*SUITS)  /* number of cards */

#define PLAYERS    4
#define CARDSINHAND 5

const char *faces[FACES] = {"Ac", "2", "3", "4", "5", "6",
                             "7", "8", "9", "10", "Ja", "Qu", "Ki"};
const char suits[SUITS] = {'S', 'C', 'D', 'H'};

typedef struct {
    int face, suit;          // index to the above arrays
} card_t;

card_t players[PLAYERS][CARDSINHAND];
card_t deck[CARDS];
```

How to give each of the players random CARDSINHAND cards?

e9.3: let's simulate a game

```
const char *faces[FACES] = {"Ac", "2", "3", "4", "5", "6",  
                             "7", "8", "9", "10", "Ja", "Qu", "Ki"};  
const char suits[SUITS] = {'S', 'C', 'D', 'H'};  
  
typedef struct {  
    int face, suit;          // index to the above arrays  
} card_t;  
  
card_t players[PLAYERS][CARDSINHAND];  
card_t deck[CARDS];
```

How to give each of the players random CARDINHAND cards?

- we start with a “brand new” deck that has some pre-defined order (for example from Ac to Ki, from S to H (easy, right?))
- we “shuffle” the deck by re-arranging its element in a *random* order (**how?**)
- then, we deliver the cards one-by-one to the players in the round-robin manner (easy, right?)

Assignment 2:

- learnt from errors, if any, in your assignment 1
- presentation: mark deduction even with one appearance of mistakes
- structure:
 - use struct and typedef
 - avoid duplication
 - ...



