CS51 Project: Technical Specification

Project name: Japanese Mahjong Hand Helper
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Signatures/Interfaces

As described from the Draft Specification, there will be two modules that will interact with each other: the tile module and the hand module.

```
1. module type tile =
2. sig
3.   type suit
4.   type value
5.   type honor
6.   type tile
7. end
```

```
1. module type hand =
2. sig
3.   type hand
4.   val sort : hand -> hand
5.   val draw : tile -> hand -> hand
6.   val discard: tile -> hand -> hand
7.   val backtrack: hand -> bool
8. end
```

Modules/Actual Code

As I progress in the implementation of tile, I have currently defined tile as a tuple (num * suit). There is still honor tiles to consider and I need to figure out how to include it as a tile even though it doesn't have a number or suit. An idea is to assign arbitrary num values to honor tiles and have the suit be the honor tiles themselves.

Due to the definition of a tuple, I need to find a way to dissect and extract the num and suit from each tuple since I will most likely need to use these tiles for later use. With that said, I'm currently adding conversion functions which converts type num

to an int and type suit to a string. I also added a print_tiles function for testing, which prints the tiles in the format [num][suit] (i.e. 3p, 2m, 1s).

After defining tile, I decided to build up the wall. The wall is essentially the deck of mahjong. I defined the wall as an array of tiles, although a list would have probably worked as well. Then I proceeded to added a Fisher-Yates shuffle function for shuffling the wall (for more details, please visit http://en.wikipedia.org/wiki/Fisher%E2%80%93Yates_shuffle).

As for the hand module, I defined hand as an array of tiles. Then I worked on the sort function of the hand module. Currently it takes a hand which only consist of tiles with the same suit and different numbers. Like the tile module, I added a print_tiles function for hand.

For testing, I printed out a wall of tiles and a shuffled wall. I manually inserted two different, unsorted hands into the sort function and have it print out the newly sorted hands.

Currently there are two files, tile.ml and hand.ml, that contains the actual code.

Timeline

With two weeks left, here is a roadmap of goals of which I wish to complete in order of descending priority:

First week:

- Completely define hand and tile modules
- Finish sort function
- Start on backtrack function
- Start on draw/discard function

Second week:

- Complete backtrack function
- Complete draw/discard function
- Complete main program that ties everything together
- Finish UI, whether it be console or other

Progress Report

See Modules/Actual Code for progress.

Version Control

I set up a new project called masontans-cs51-project on code.seas. The name of the repository is incidentally called masontans-cs51-project…