

PIC 10A 1C Week 10a Mini quiz. TA: Eric Kim [Solutions]

1. Spot the Errors [3 minutes]

Consider the following function that computes the mean (average) of a vector of integers:

```
int vecmean(vector<int> nums) {
    double mean = 0.0;
    for (int i = 0; i < nums.size(); ++i) {
        mean = mean + nums[i];
    }
    return mean / nums.size();
}
```

Correct any issues with the code, giving a brief explanation for each correction.

[Solution]

Modifications are made in bold, red:

```
double vecmean(const vector<int>& nums) {
    double mean = 0.0;
    for (size_t i = 0; i < nums.size(); ++i) {
        mean = mean + nums[i];
    }
    return mean / nums.size();
}
```

1. Return value should be double, not int.
2. Pass nums in as reference parameter to avoid making unnecessary copy. Also, make it const, since we don't modify nums.
3. Use size_t, not int!

2. Want to play a game? [5 minutes]

We wish to create a simple RPG-like game, involving Player objects. Write both the class interface and the class implementation following this behavior:

- Each Player has an integer amount of **health**, and a **name**.
- The **default constructor** should set **health to 10**, and **name to "Dummy"**
- Write a **two-argument constructor** that sets the health/name to values that are passed in
- Write a **heal() method** that increments the health by +2.
- Write **get_health()** and **get_name()** getter methods.

Make sure to follow public/private conventions, as well as const/reference conventions. You must define all implementations **outside of the class** - this includes constructors!

[Solution]

```
class Player {
public:
    Player();
```

```
    Player(int health, const string& name);
    void heal();
    int get_health() const;
    string get_name() const;
private:
    int myhealth; string myname;
};
Player::Player() : myhealth(10), myname("Dummy") {}
Player::Player(int health, const string& name) : myhealth(health),
    myname(name) {}
void Player::heal() {
    this->myhealth = this->myhealth + 2;
}
int Player::get_health() const { return this->myhealth; }
string Player::get_name() const { return this->myname; }
```