

CS205 C/ C++ Programming_Assignment4

Name: Lizinan

SID: 12011517

Part 1. Card

Analysis

Because the head file is given, I just need to complete the function as required. Special cards' effect function should be overwrite to fit the requirements.

Code

```
Card::Card(string name, int attack, int defense){
    this->attack = attack;
    this->defense = defense;
    this->name = name;
}

void Card::effect(Card& oppenentCard, Player& player, Player& opponent){}

double Card::power(Card opponentCard){
    return this->attack - opponentCard.defense / 2;
}

ostream& operator<<(ostream& os, const Card& card){
    os << card.name << " " << card.attack << " " << card.defense << endl;
    return os;
}
```

```
BigBossCard::BigBossCard(string name, int attack, int defense): Card(name, attack, defense)
{}

void BigBossCard::effect(Card& oppenentCard, Player& player, Player& opponent) {
    for (Card& c : player.deck) {
        c.attack += oppenentCard.attack;
        c.defense += oppenentCard.defense;
    }
    for (int i = opponent.deck.size() - 1; i >= 0; i--) {
        if (opponent.deck[i].attack == oppenentCard.attack || opponent.deck[i].defense ==
        oppenentCard.defense) {
            opponent.deck.erase(opponent.deck.begin() + i);
        }
    }
}
```

```

ExchangeCard::ExchangeCard(string name, int attack, int defense): Card(name, attack, defense)
{}

void ExchangeCard::effect(Card& opponentCard, Player& player, Player& opponent){
    int tmp = opponentCard.attack;
    opponentCard.attack = opponentCard.defense;
    opponentCard.defense = tmp;
}

```

Result & Verification

```

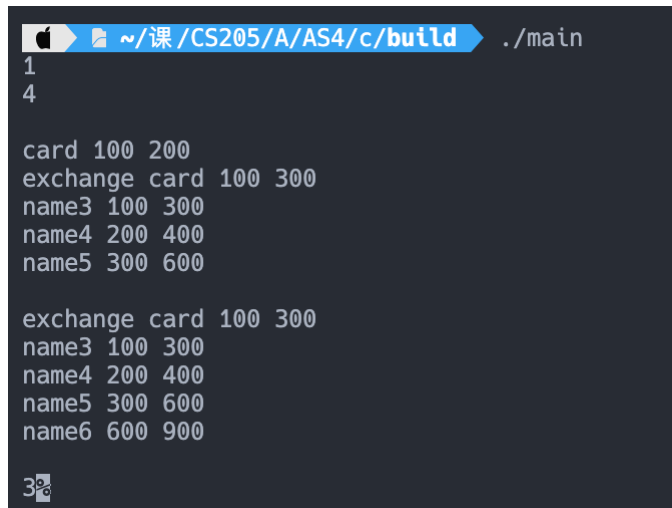
card.effect(player.hand[0], player, opponent);
card3.effect(card4, player, opponent);

```

```

cout << opponent.deck.size() << endl;
cout << player.deck.size() << endl;
cout << endl;
player.displayHand();
cout << endl;
player.draw();
player.play(0);
player.displayHand();
cout << endl;
cout << player.deck.size();

```



A terminal window with a dark background and light blue title bar. The title bar shows the path ~/课/CS205/A/AS4/c/build and the command ./main. The output of the program is as follows:

```

1
4

card 100 200
exchange card 100 300
name3 100 300
name4 200 400
name5 300 600

exchange card 100 300
name3 100 300
name4 200 400
name5 300 600
name6 600 900

```

Difficulties & Solutions

None

Part 2. Player

Analysis

I found a serious problem in class Player. **The deck and hand should use pointer instead of vector.** Because using vector will lead to the special cards' effect function

become useless. It will call the effect() in Card.cpp not in it's subclass. But I don't change the type of deck and hand, for I don't know how test frame was written. 😞

Code

```
Player::Player(vector<Card>& deck, string name) {
    this->deck = deck;
    this->name = name;
    hand = {};
    for (int i = 0; i < 5; ++i) {
        draw();
    }
}

void Player::draw() {
    this->hand.push_back(*deck.begin());
    this->deck.erase(deck.begin());
}

Card Player::play(int index) {
    Card tmp = this->hand[index];
    this->hand.erase(hand.begin() + index);
    return tmp;
}

void Player::displayHand() {
    for (Card c : hand) {
        cout << c;
    }
}
```

Result & Verification

The result mentioned above can be varification by the following code.

```
std::vector<Card> deck = {card, card2, card3, card4, card5, card6, card4, card4, card4};

std::vector<Card> oppenentDeck = {card4, card4, card, card2, card3, card4, card5};

Player player = Player(deck, "John");
Player opponent = Player(oppenentDeck, "Alice");

Card c1 = player.play(1);
Card c2 = opponent.play(0);
c1.effect(c2, player, opponent);
cout << c2 << endl;
card2.effect(c2, player, opponent);
cout << c2 << endl;
```

```
~/课/CS205/A/AS4/c/build ./main
name4 200 400
name4 400 200
```

Difficulties & Solutions

None

Others

I write a cmake file to compile the program. Use it to run the program