

CA 3: Experiential Learning

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Problem Statement:

You are tasked with developing a simple casino game in C++. The game called "Number Guessing Game" should allow players to guess a random number between 1 and 10 and place bets using an initial balance in rupees.

Explanation:

This is a menu-driven code that allows the user to enter their name and amount they want to bet with including their initial amount for the betting , this program contains the following details:

1. Name
2. Initial Balance you want in Casino game
3. Betting number
4. Won or Lost in game
5. Final Balance

Code used for making this game is written with help of Inheritance and polymorphism:

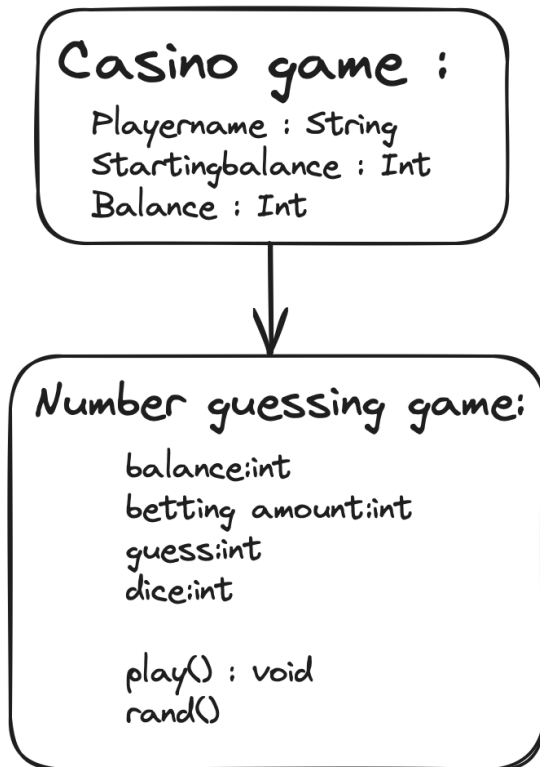
Polymorphism and Inheritance:

- Implemented the game using object-oriented programming, making use of base and derived classes.

- Create a base class, "CasinoGame," which defines a common interface for casino games. This class should have a pure virtual function "play" to be implemented by derived classes.

- Create a derived class, "NumberGuessingGame," that implements the specific rules and gameplay for the number guessing game. This class should override the "play" function.

Class Diagram:



Code Snippets:

```
class CasinoGame {
public:
    CasinoGame(const string& playerName, int startingBalance)
        : playerName(playerName), balance(startingBalance) {}

    virtual void play() = 0;

protected:
    string playerName;
    int balance;
};
```

```

class NumberGuessingGame : public CasinoGame {
public:
    NumberGuessingGame(const string& playerName, int startingBalance)
        : CasinoGame(playerName, startingBalance) {}

    void play() override {
        cout << "\n\t\t\t=====WELCOME TO CASINO WORLD=====\\n\\n";
        char choice;
        do {
            clearScreen();
            rules();
            cout << "\\n\\nYour current balance is $ " << balance << "\\n";

            int bettingAmount;
            do {
                cout << "Hey, " << playerName << ", enter amount to bet : $";
                cin >> bettingAmount;
                if (bettingAmount > balance)
                    cout << "Betting balance can't be more than current balance!\\n"
                        << "\\nRe-enter balance\\n ";
            } while (bettingAmount > balance);

            int guess;
            do {
                cout << "Guess any betting number between 1 & 10 :";
                cin >> guess;
                if (guess <= 0 || guess > 10)
                    cout << "\\nNumber should be between 1 to 10\\n"
                        << "Re-enter number:\\n ";
            } while (guess <= 0 || guess > 10);

            int dice = rand() % 10 + 1;
            if (dice == guess) {
                cout << "\\n\\nYou are in luck!! You have won Rs." << bettingAmount * 10;
                balance = balance + bettingAmount * 10;
            }
            else {
                cout << "Oops, better luck next time !! You lost $ " << bettingAmount << "\\n";
                balance = balance - bettingAmount;
            }
            cout << "\\nThe winning number was : " << dice << "\\n";
            cout << "\\n" << playerName << ", You have balance of $ " << balance << "\\n";
            if (balance == 0) {
                cout << "You have no money to play ";
                break;
            }
            cout << "\\n\\n-->Do you want to play again (y/n)? ";
            cin >> choice;
        } while (choice == 'Y' || choice == 'y');
        cout << "\\n\\n\\n";
        cout << "\\n\\nThanks for playing the game. Your balance is $ " << balance << "\\n\\n";
    }

private:
    void rules() {
        system("cls");
        cout << "\\t\\t=====CASINO NUMBER GUESSING RULES!=====\\n";
        cout << "\\t1. Choose a number between 1 to 10\\n";
        cout << "\\t2. Winner gets 10 times of the money bet\\n";
        cout << "\\t3. Wrong bet, and you lose the amount you bet\\n\\n";
    }
};

```

```

int main() {
    string playerName;
    int startingBalance;

    cout << "\\n\t\t\t=====WELCOME TO CASINO WORLD=====\\n\\n";
    cout << "\\n\\nWhat's your Name : ";
    cin.ignore();
    getline(cin, playerName);
    cout << "\\n\\nEnter the starting balance to play game : $";
    cin >> startingBalance;

    NumberGuessingGame game(playerName, startingBalance);
    game.play();

    return 0;
}

```

Input/Output:

```
=====WELCOME TO CASINO WORLD=====

What's your Name : Vasu
Enter the starting balance to play game : $1000
=====WELCOME TO CASINO WORLD=====

=====CASINO NUMBER GUESSING RULES!=====
    1. Choose a number between 1 to 10
    2. Winner gets 10 times of the money bet
    3. Wrong bet, and you lose the amount you bet

Your current balance is $ 1000
Hey, Vasu, enter amount to bet : $400
Guess any betting number between 1 & 10 :5
Oops, better luck next time !! You lost $ 400

The winning number was : 4

Vasu, You have balance of $ 600

-->Do you want to play again (y/n)? n
Thanks for playing the game. Your balance is $ 600
```

Github repository link:

