

### **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:**

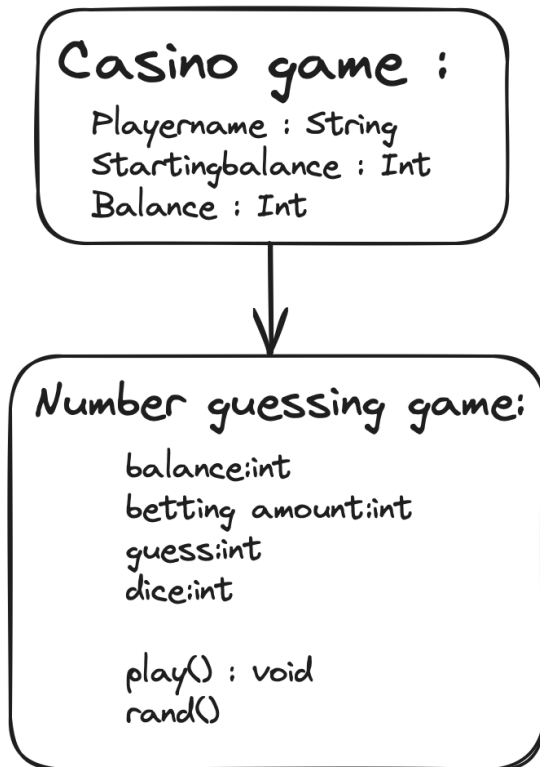
Polymorphism and Inheritance:

- 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:***

<https://github.com/flex-V-00/Projects>

