```java
import java.util.Random;


public class Die {
    private int value;

    public Die() {
        Roll();
    }

    // get dice number from 'Random'
    public void Roll() {
        Random random = new Random();
        setValue(random.nextInt(6) + 1);
    }

    // getter to retrieve the value from 'private int value'
    public int getValue() {
        return value;
    }
    // setter to set the value
    public void setValue(int value) {
        this.value = value;
    }
}
```

```java
public class Player {

    // encapsulate money they have and two die objects
    private int money;
    private Die die1;
    private Die die2;
    private int total;

    public Player() {
        money = 100;  //initialize the money
        die1 = new Die();
        die2 = new Die();
    }

    // 'roll' method to randomize their dice
    public void roll() {
        die1.Roll();
        die2.Roll();
    }

    // 'total' method to get double dice total.
    public int total() {
        total = die1.getValue() + die2.getValue();
        return total;
    }

    // setter to set the value of money
    public void setMoney(int money) {
        this.money = money;
    }
    // getter to retrieve the private value from 'money'
    public int getMoney() {
        return money;
    }

    public int getD1Value() {
        return die1.getValue();
    }

    public int getD2Value() {
        return die2.getValue();
    }
}
```

```java
// create a new class 'DateTime'
// initialize 6 private member variables
public class DateTime {

    private int year;
    private int month;
    private int day;
    private int hour;
    private int minute;
    private int second;

    public DateTime (){}

    public DateTime(int year, int month, int day, int hour, int minute, int second) {
        this.year = year;
        this.month = month;
        this.day = day;
        this.hour = hour;
        this.minute = minute;
        this.second = second;
    }

    // getters for accessing for each private member variable
    public int getYear() {
        return year;
    }

    public int getDay() {
        return month;
    }

    public int getHour() {
        return hour;
    }

    public int getMinute(){
        return minute;
    }

    public int getSecond() {
        return second;
    }

    public void setYear(int Year) {this.year = Year;}

    // method for printing the ISO format
    public void printDateTime() {

        System.out.printf("The current time is: %d-%02d-%02dT%02d:%02d:%02d", year, month, day, hour, minute, second);
    }
```

```
51 }
```

```java
import java.util.Scanner;

public class HighLowGame {

    Player p1 = new Player();   //Computer
    Player p2 = new Player();   //You

    private void rollTheDice(){
        p1.roll();
        p2.roll();
        System.out.println("You both roll your dice....");
        System.out.println();
        System.out.printf("The computer rolled a %d and a %d\n", p1.getD1Value(), p1.getD2Value());
        System.out.printf("You rolled a %d and a %d", p2.getD1Value(), p2.getD2Value());
        System.out.println();
    }

    private void checkForWin(int betForYou, int betForComp) {
        if(p1.total() == p2.total()) {
            System.out.println("No Winner this time. Roll again.");
        } else {
            // If computer wins...
            if(p1.total() > p2.total()) {
                int p1Money = p1.getMoney() + betForComp;
                p1.setMoney(p1Money);
                int p2Money = p2.getMoney() - betForYou;
                p2.setMoney(p2Money);
                System.out.println("You LOST!\n");
            // If you win...
            } else {
                int p2Money = p2.getMoney() + betForYou;
                p2.setMoney(p2Money);
                int p1Money = p1.getMoney() - betForComp;
                p1.setMoney(p1Money);
                System.out.println("You WIN!\n");
            }
        }
    }

    public void Run() {

        String input;
        Scanner scanner = new Scanner(System.in);
        int betForYou;
        int betForComp;

        System.out.println("Game Begins!");
        System.out.println();

```

```
50          do {
51              System.out.printf("You: $%d, Computer: $%d", p2.
    getMoney(), p1.getMoney());
52              System.out.println();
53              System.out.print("What is your bet?");
54              betForYou = scanner.nextInt();
55              System.out.print("The computer bets: ");
56              betForComp = scanner.nextInt();
57
58              rollTheDice();
59              checkForWin(betForYou, betForComp);
60
61              //determine if the player still has money
62              if (p1.getMoney() > 0 && p2.getMoney() > 0) {
63
64                  //if they have money, ask for playing again
65                  System.out.print("Play again? (y/n) ");
66                  input= scanner.next();
67                  System.out.println();
68
69                  //if they don't have money, they can't play
70              } else {
71                  if (p2.getMoney() <= 0) {
72                      System.out.println("You lost all your
    money.");
73                  } else {
74                      System.out.println("The computer lost all
    the money.");
75                  }
76                  input = "n";
77              }
78          } while (!(input.equals("n")));
79          System.out.printf("You left with $%d", p2.getMoney());
80      }
81  }
82
```

```java
public class Assignment2a {

    public static void main(String[] args) {

        // call the function 'exp' with the value of 2 to the exponent 8
        int value = exp(2,8);

        System.out.println(value);
    }

    //create a function with two int parameters
    public static int exp(int base, int exponent) {

        int value = 1;

        for (int i=0; i<exponent; i++) {
            value = value*base;
        }
        return value;
    }

}
```

```java
import java.util.Scanner;

public class Assignment2b {

    public static void main(String[] args) {

        // Take the current time using a Scanner.
        Scanner s = new Scanner(System.in);

        System.out.println("Enter the current year, month, day, hour, minute, second:");

        int year = s.nextInt();
        int month = s.nextInt();
        int day = s.nextInt();
        int hour = s.nextInt();
        int minute = s.nextInt();
        int second = s.nextInt();

        // constructor for a new object
        DateTime dt1 = new DateTime(year, month, day, hour, minute, second);

        //call the method to print
        dt1.printDateTime();
    }
}

```

```java
import java.util.Scanner;

/*
 This game has two player: Me and Computer
 Each Player has two dice and starts with $100.
 The players roll their dice
 The player with the higher dice total wins and get $20.
 The player with the lower dice total loses $40.
 If one of the players lose all the money, game ends.
*/

public class Assignment2c {
    public static void main(String[] args) {
        Double doubleGame = new Double();
        doubleGame.Run();

    }

public static class Double {

    Player p1 = new Player(); //User
    Player p2 = new Player(); //Computer

    private void rollTheDice() {
        p1.roll();
        p2.roll();

        System.out.printf("You rolled: %d and the computer rolled %d\n", p1.total(), p2.total());
    }

    private void checkForWin() {

        // if their dice totals are same...
        if (p1.total() == p2.total()) {
            System.out.println("No Winner this time. Roll again!");

        // if their dice totals are different...
        // The winner will earn $20, the loser will lose $40
        } else {
            // if I won...
            if (p1.getMoney() > p2.getMoney()){
                System.out.println("You WON!");
                int p1Money = p1.getMoney() + 20;
                p1.setMoney(p1Money);
                int p2Money = p2.getMoney() - 40;
                p2.setMoney(p2Money);
                System.out.printf("You have $%d and the computer have $%d\n", p1Money, p2Money);

            // if I lose...
```

```
50              } else {
51                  System.out.println("You LOST!");
52                  int p2Money = p2.getMoney() + 20;
53                  p2.setMoney(p2Money);
54                  int p1Money = p1.getMoney() - 40;
55                  p1.setMoney(p1Money);
56                  System.out.printf("You have $%d and the
   computer have $%d\n", p1Money, p2Money);
57          }
58        }
59      }
60
61      public void Run() {
62
63          String input;
64          Scanner scanner = new Scanner(System.in);
65
66          do {
67              System.out.println("The Game Begins!");
68              System.out.printf("You: $%d, Computer: $%d\n", p1.
   getMoney(), p2.getMoney());
69
70              rollTheDice();
71              checkForWin();
72
73              //determine if the player still has money
74              if (p1.getMoney() > 0 && p2.getMoney() >0 ) {
75
76                  //if they have money, they can play again.
77                  System.out.print("Play again? (y/n) ");
78                  input = scanner.nextLine();
79
80                  // if they don't have money, they can't play
81              } else {
82                  input= "n";
83              }
84
85          // Stop the game with an input "n"
86          } while (!(input.equals("n")));
87          System.out.println("The Game ends...");
88      }
89    }
90 }
91
92
93
```

File - C:\Users\19024\IdeaProjects\assignment-2-Jeong1223\src\Assignment2d.java

```java
public class Assignment2d {

    public static void main(String[] args) {

        HighLowGame game = new HighLowGame();
        game.Run();

    }

}

```