

```
1 public class Assignment2a {
2
3     public static int exp(int base, int exponent) {
4         int answer = 1;
5         //using a loop to multiply the base by itself the "
exponent" number of times
6         for (int i=1; i<=exponent; i++) {
7             answer *= base;
8         }
9         return answer;
10    }
11
12    public static void main(String[] args) {
13        int answer = exp(2,8);
14        System.out.println(answer);
15
16    }
17 }
```

```
1 package Assignment2B;
2
3 public class DateTime {
4
5     private String year;
6     private String month;
7     private String day;
8     private String hour;
9     private String minute;
10    private String second;
11
12    //creating a Assignment2B.DateTime constructor to store
the variables of the date and time
13    public DateTime(String year, String month, String day,
String hour, String minute, String second){
14        this.year = year;
15        this.month = month;
16        this.day = day;
17        this.hour = hour;
18        this.minute = minute;
19        this.second = second;
20    }
21
22    //using getters and setters for each variable
23    public String getYear() {
24        return year;
25    }
26
27    public void setYear(String year) {
28        this.year = year;
29    }
30
31    public String getMonth() {
32        return month;
33    }
34
35    public void setMonth(String month) {
36        this.month = month;
37    }
38
39    public String getDay() {
40        return day;
41    }
42
43    public void setDay(String day) {
44        this.day = day;
```

```
45     }
46
47     public String getHour() {
48         return hour;
49     }
50
51     public void setHour(String hour) {
52         this.hour = hour;
53     }
54
55     public String getMinute() {
56         return minute;
57     }
58
59     public void setMinute(String minute) {
60         this.minute = minute;
61     }
62
63     public String getSecond() {
64         return second;
65     }
66
67     public void setSecond(String second) {
68         this.second = second;
69     }
70
71     //overriding the default behavior of the toString
function to set the format
72     @Override
73     public String toString() {
74         return year + '-' +
75             month + '-' +
76             day + "T" +
77             hour + ':' +
78             minute + ':' +
79             second ;
80     }
81 }
```

```
1 package Assignment2B;
2
3 public class Assignment2b {
4
5     public static void main(String[] args) {
6
7         //setting the current date and time and storing it
        in a variable
8         DateTime current = new DateTime("2020", "02", "22"
        , "07", "17", "27");
9
10        System.out.println(current.toString());
11
12    }
13
14 }
```

```
1 package GameAssignment2C2D;
2
3 import java.util.Random;
4
5 //This is the class
6 public class Die {
7     private int value;
8
9     public int getValue() {
10         return this.value;
11     }
12
13     public void setValue(int value) {
14         this.value = value;
15     }
16
17     //function to "roll" a dice or to get a random value
    from 1-6
18     public void roll (){
19         Random random = new Random();
20         value = random.nextInt(6) + 1;
21     }
22
23 }
```

```
1 package GameAssignment2C2D;
2
3 import java.util.Scanner;
4
5 public class Player {
6
7     private String name;
8     private int money;
9     private Die dice1;
10    private Die dice2;
11
12    public Player(String name) {
13        this.name = name;
14        this.money = 100;
15        this.dice1 = new Die();
16        this.dice2 = new Die();
17    }
18
19    //function to make both dice roll
20    public void roll() {
21        dice1.roll();
22        dice2.roll();
23    }
24
25    //function to add up both dice values
26    public int total(){
27        int totalRoll = dice1.getValue() + dice2.getValue
28    ();
29
30        return totalRoll;
31    }
32
33    //returns the value of the first die
34    public Die getDice1() {
35        return dice1;
36    }
37
38    //returns the value of the second die
39    public Die getDice2() {
40        return dice2;
41    }
42
43    //returns the name of the player
44    public String getName() {
45        return name;
46    }
47 }
```

```
46
47     //sets the name of the player
48     public void setName(String name) {
49         this.name = name;
50     }
51
52     //returns the amount of money the player has
53     public int getMoney() {
54         return money;
55     }
56
57     //sets the amount of money the player has
58     public void setMoney(int money) {
59         this.money = money;
60     }
61
62     //function to ask the player how much they want to bet
63     public int placeBet(){
64         Scanner s = new Scanner(System.in);
65         System.out.print("What is your bet? ");
66         int bet = s.nextInt();
67
68         return bet;
69     }
70 }
```

```
1 package GameAssignment2C2D;
2
3 import java.util.Random;
4
5 public class Computer {
6
7     private String name;
8     private int money;
9     private Die dice1;
10    private Die dice2;
11
12    public Computer(String name) {
13        this.name = name;
14        this.money = 100;
15        this.dice1 = new Die();
16        this.dice2 = new Die();
17    }
18
19    //function to make both dice roll
20    public void roll() {
21        dice1.roll();
22        dice2.roll();
23    }
24
25    //function to add up both dice values
26    public int total(){
27        int totalRoll = dice1.getValue() + dice2.getValue
28    (
29    );
30
31        return totalRoll;
32    }
33
34    //returns the value of the first die
35    public Die getDice1() {
36        return dice1;
37    }
38
39    //returns the value of the second die
40    public Die getDice2() {
41        return dice2;
42    }
43
44    //returns the name of the player
45    public String getName() {
46
47        return name;
48    }
49 }
```



```
46     }
47
48     //sets the name of the player
49     public void setName(String name) {
50
51         this.name = name;
52     }
53
54     //returns the amount of money the computer has
55     public int getMoney() {
56         return money;
57     }
58
59     //sets the amount of money the computer has
60     public void setMoney(int money) {
61
62         this.money = money;
63     }
64
65     //function that randomly determines the computer's bet
66     public int placeBet() {
67         Random random = new Random();
68         int value = random.nextInt(100) + 1;
69         System.out.println("The computer bets: " + value);
70
71         return value;
72     }
73 }
```

```

1 package GameAssignment2C2D;
2
3 public class testGame {
4     private Player player;
5     private Computer computer;
6
7     public testGame() {
8         player = new Player("Human");
9         computer = new Computer("Machine");
10    }
11
12    public void runGame() {
13
14        System.out.println("Welcome to HUMAN vs MACHINE!");
15        System.out.println("Roll the same total dice as the
computer to win!");
16        System.out.println();
17
18        //Getting the amount for each bet
19        System.out.printf("Player has $%, Computer has $%,
\n", player.getMoney(), computer.getMoney());
20        System.out.println("To start, place your bet.");
21        System.out.printf("You have $%. \n", player.
getMoney());
22
23        int playerBet = player.placeBet();
24        int computerBet = computer.placeBet();
25
26        //rolling the set of dice for the human player
27        System.out.println("Rolling your dice...");
28        player.roll();
29        System.out.printf("You rolled %s and a %s! With the
total of %s!\n\n", player.getDice1().getValue(),
30                        player.getDice2().getValue(),
player.total());
31
32        //rolling the set of dice for the computer
33        System.out.println("Rolling the machine's dice..."
);
34        computer.roll();
35        System.out.printf("You rolled %s and a %s! With the
total of %s!\n", computer.getDice1().getValue(),
36                        computer.getDice2().getValue
(), computer.total());
37
38        //if the player and the computer have the same

```

```
38 total dice, the player wins
39     if (player.total() == computer.total()) {
40         System.out.println("YOU WIN!");
41         player.setMoney(player.getMoney() + playerBet);
42         computer.setMoney(computer.getMoney() -
        computerBet);
43
44     } else {
45         //if the player and the computer have different
        total dice, the computer wins
46         System.out.println("YOU LOSE!");
47         player.setMoney(player.getMoney() - playerBet);
48         computer.setMoney(computer.getMoney() +
        computerBet);
49     }
50
51     System.out.printf("YOU HAVE $%s!", player.getMoney
        ());
52
53 }
54
55 }
```

```
1 package GameAssignment2C2D;
2
3 import java.util.Scanner;
4
5 public class HighLowGame {
6     private Player player;
7     private Computer computer;
8
9     public HighLowGame(){
10         player = new Player("Player");
11         computer = new Computer("Computer");
12     }
13
14     public void displayMoney(){
15         System.out.printf("You: %s Computer: %s \n", player
16             .getMoney(), computer.getMoney());
17     }
18
19     public void displayRolls(){
20         System.out.printf("The computer rolled a %s and a %
21             s. \nYou rolled a %s and a %s.",
22             computer.getDice1().getValue(),
23             computer.getDice2().getValue(),
24             player.getDice1().getValue(),
25             player.getDice2().getValue());
26     }
27
28     public void run() {
29         System.out.println("Game Begins!");
30         System.out.println();
31
32         String input;
33
34         do {
35             //displaying the current amount of money the
36             computer and the player have
37             displayMoney();
38             System.out.println();
39
40             //getting the player and computer's bets
41             int playerBet = player.placeBet();
42             int computerBet = computer.placeBet();
43             System.out.println();
44
45             System.out.println("You both roll your dice.. "
46                 );
47         }
48     }
49 }
```

```

41         System.out.println();
42
43         //rolling each player's two dice and displaying
         them
44         player.roll();
45         computer.roll();
46         displayRolls();
47
48         //determining who got the higher total dice,
         the higher total dice wins
49         //the winner will get the amount that they bet
         , the loser will lose the amount that they bet
50         if (player.total() > computer.total()) {
51             System.out.println();
52             System.out.println("YOU WIN!");
53             player.setMoney(player.getMoney() +
         playerBet);
54             computer.setMoney(computer.getMoney() -
         computerBet);
55         } else if (computer.total() > player.total()) {
56             System.out.println();
57             System.out.println("YOU LOST!");
58             player.setMoney(player.getMoney() -
         playerBet);
59             computer.setMoney(computer.getMoney() +
         computerBet);
60         } else {
61             //if the computer and player are tied, they
         don't lose anything
62             System.out.println("It's a tie!");
63             player.setMoney(player.getMoney());
64             computer.setMoney(computer.getMoney());
65         }
66
67         //making sure the game will continue only if
         the player and the computer still have money
68         if (player.getMoney() > 0 & computer.getMoney
         () > 0) {
69             Scanner s = new Scanner(System.in);
70             System.out.print("Play again? (y/n) ");
71             input = s.nextLine();
72         } else if (computer.getMoney() <= 0) {
73             //if computer has lost all the money, the
         game is over and the player wins
74             System.out.println("The computer lost all
         its money! You win!");

```

```
75         input = "n";
76     } else {
77         //if player has lost all the money, the
       player has to exit the game
78         System.out.println("You lost all your
money.");
79         input = "n";
80     }
81
82     } while (input.equals("y") | input.equals("Y"));
83     System.out.println();
84     System.out.println("You are left with $" + player.
getMoney() + ".");
85     }
86
87 }
```

```
1 package GameAssignment2C2D;
2
3 public class Assignment2c {
4
5     public static void main(String[] args) {
6
7         testGame sampleGame = new testGame();
8         sampleGame.runGame();
9
10    }
11
12 }
```

```
1 package GameAssignment2C2D;
2
3 public class Assignment2d {
4
5     public static void main(String[] args) {
6
7         HighLowGame game = new HighLowGame();
8         game.run();
9
10    }
11
12 }
```