**Three Dice**

**Analysis**

The program Three Dice will read in three numbers and then determine what outcome to return depending on the values given. The possible outcomes will be; all the same, a pair, a run, or all different.

**Design**

There will be two classes, Dice and DiceUser. Dice will be used to compare the three numbers and determine which outcome has happened. DiceUser will read in the three numbers given by the user and pass them to Dice. It will then output the result determined in Dice.

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| **DiceUser** |
|  |
| + main(String[] args) |

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| **Dice** |
| - first: double  - second: double  - third: double  - newFirst: double  - newSecond: double  - newThird: double  - rollArray: double |
| + sort()  + result()  + sortedRoll()  + sortedRoll2()  + sortedRoll3() |

**Pseudo Code**

Public class diceUser

Main = string args

Create new dice object

Create new scanner

Set second and third roll values

Get first roll value

Start IF

First <1 or First >6

Invalid choice

End IF

Start else

Get second roll value

End else

Start IF

Second <1 or Second >6

Invalid choice

End IF

Start else

Get third roll value

End else

Start IF

Third <1 or Third >6

Invalid choice

End IF

Start else

Create new dice class

Call sorting array

Output the three values

Output the values in order

Output type of result

End else

End

Public class Dice

Create constructor

Method = sort

Create new array

Assign roll values

Sort values

Assign the sorted array values to new variables

Method = result

Start IF

First = second and first = third

Return all the same

End IF

Start else

(First+1 = second) and (second+1 = third)

Return a run

End else

Start else

(First != second) and (second != third)

Return all different

End else

Start else

Return a pair

End else

Method = sortedRoll

Return ordered roll 1

Method = sortedRoll2

Return ordered roll 2

Method = sortedRoll3

Return ordered roll 3

**Testing**

|  |  |  |
| --- | --- | --- |
| **Test** | **Expected Result** | **Actual Result** |
| All the numbers entered will be the same | The output will say they are all the same |  |
| All the numbers entered will be different in ascending order | The output will say they are all different |  |
| The numbers entered will be different but in a random order | The output will say they’re all different but will also order them |  |
| The numbers entered will be in a run | The output will say they are in a run |  |
| The numbers entered will be in a run but of order | The output will say they are in a run and order the numbers |  |
| The numbers entered will be a pair | The output will say there is pair |  |
| The first value will be below 1 | There will be an error |  |
| The second value entered will be below 1 | There will be an error |  |
| The third value entered will be below 1 | There will be an error |  |
| The first value entered will be above 6 | There will be an error |  |
| The second value entered will be above 6 | There will be an error |  |
| The third value entered will be above 6 | There will be an error |  |