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CSCI 165 Module 1: Problems

1/28/2020

Puzzle Problem 1:

1. Get Calculator.
2. Turn Calculator on.
3. Press button that corresponds to first digit of the grade.
4. Press button that corresponds to second digit of the grade.
5. If there is a third number press button that corresponds to third digit.
6. If there is not a third digit determine if there is another grade to enter.
7. If there is another grade to enter press the addition button and go back to step 3.
8. If there is not another grade to enter press the equals button.
9. Press the division button.
10. Press the equals button.

Puzzle Problem 2:

1. Write message to be encoded.
2. Set Caesar cipher shift to 5.
3. Get first letter of uncoded message.
4. Set the shift count to 0.
5. If the letter is 'z' replace with the letter 'a'.
6. If the letter is not 'z' replace with the next letter of the alphabet.
7. Add one to the shift count.
8. If shift count is less than 5 go back to step 5.
9. Write letter to encoded message
10. If there are more letters in the message get next letter or space.
11. If it is a space write the space in the coded message.
12. If it is a letter return to step 4.
13. If there are no more letters the message is complete.

Puzzle Problem 3:

1. Write encoded message at the top of the paper.
2. On the next line for each letter in the message write the letter that precedes it.
3. If the letter is an 'a' it becomes a 'z'.
4. A space remains a space in the decoded message.
5. When all the letters have been shifted try to read the message.

6. If the shift has not resulted in a readable message. Go to step 2 using the new line in place of the original message.
7. If the message is now readable, you have decoded the message and are finished.

The example message says: "Puzzles are fun" and used a shift of three.

Puzzle Problem 4:

1. Erase chalkboard.
2. Write a 0 in the left and right most area of the chalkboard.
3. Get the next grade from you brother.
4. Add the new grade to the product of the two numbers on the chalkboard. (new grade + (left number * right number))
5. Add one to the leftmost number and replace it with the new value.
6. Divide the number obtained in step 4 by the number in the leftmost column of the chalkboard
7. Erase the numbers in columns 2-4 of the chalkboard and write the number obtained in step 6 rounded to three digits.
8. If there is another grade go back to step 3.
9. If there are no more grades, the number in columns 2-4 is the average of the grades.

Puzzle Problem 5:

15 46 23 70 35 106 53 160 80 40 20 10 5 16 8 4 2 1

Puzzle Problem 6:

6 3 10 5 16 8 4 2 1

Problem 8 UML:

circle
- radius : double
+ calculateArea(radius) : double

Problem 9 UML:

triangle
- side1 : double - side2 : double - side3 : double
+ calculateArea(side1, side2, side3) : double + calculateArea(side1, side2, side3) : double + calculatePerimeter(side1, side2, side3) : double

Problem 10:

```
MINGW64:/c/Users/cfcha/tc3-csci165-online/module-1
cfcha@Mike-PC MINGW64 ~/tc3-csci165-online/module-1 (master)
$ javac shapes.java
cfcha@Mike-PC MINGW64 ~/tc3-csci165-online/module-1 (master)
$ java shapes
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cfcha@Mike-PC MINGW64 ~/tc3-csci165-online/module-1 (master)
$ 3~
```