Python / Pseudocode Challenges

Difficulty Level: Easy

1. Design a program which asks the user to input their name, age and favourite colour. The program then outputs their name followed by their age followed by their favourite colour, in separate lines.

2. The program asks the user to input their first name and then their surname. The program then outputs the user's first name and then their surname on the same line. E.g., "John Noel"

3. The program asks the user to input two numbers. The program will then output:
   - The two numbers added together followed by
   - The two numbers multiplied together
     E.g., if the numbers are 2 and 3, we should get the output to be 5 and 6

4. Write an algorithm that:
   - Asks the user for the distance
   - Asks the user for the time that a journey was completed in.
   - Calculates and outputs the average speed using a function.

   HINT: Speed = Distance / Time

5. The program asks the user to input the number of letters in the alphabet. The program must then output whether they got it correct or incorrect.

Difficulty Level: Medium

6. Write an algorithm that:
   - Generates a random number between 1 and 10.
   - It must then ask the user to guess this number.
   - If they guess it correctly it should display 'Correct'
   - Otherwise, display 'Not what I was thinking'

7. Write an algorithm that:
   - Asks the user to input the traffic light colour.
   - If the traffic light colour is green, outputs 'Go.'
   - If the traffic light colour is amber, outputs 'Get Ready.'
   - Otherwise outputs 'Stop.'

8. Write an algorithm that:
   - Asks the user how long on average they spend watching TV each day.
   - If it is less than 2 hours, outputs 'That should be ok'
   - If it is between 2 and 4 hours, outputs 'That will rot your brain'
   - Otherwise outputs "That is too much TV"

9. Write an algorithm that:
   - Outputs all odd numbers between 1 and 20 only.

10. Write an algorithm that:
    - Asks the user to input a number and repeat this until they guess the number 7.
    - Congratulate the user with a 'Well Done' message when they guess correctly.

Difficulty: Hard

11. A local swimming centre offers the following discounts:
    1. Members who are aged between 13 and 15 receive a 30% discount.
    2. Members who are aged between 16 and 17 receive a 20% discount.
    3. Members who are aged 50 and over receive a 40% discount.
    4. All other members receive no discount.

    Create an algorithm using Pseudocode for the above actions.

12. Write an algorithm that:
    - Asks the user to input how many marks they got on a test.
    - It should then convert this to a grade between 1 to 9 using the table below and then output the grade to the user. If they have not scored enough to be given a grade than a 'U' grade must be output.

Mark	Grade
Greater than or equal to 10	1
Greater than or equal to 20	2
Greater than or equal to 30	3
etc	

13. Write an algorithm that:
    - Adds together all the elements in the array [1,2,4,5,10]
    - Should print 22

14. Write an algorithm that:
    - Asks the user to type a number
    - And if the number is in the array [15,30, 3,1,40] it should print "Found" otherwise print "not found"

15. A school uses an array called studentnames to call an attendance register every morning.
    Write an algorithm using iteration to:

    - Display the name of each student one at a time from studentnames
    - Take as input whether that student is present or absent
    - Display the total number of present students and number of absent students in a suitable message, after all students have been displayed.

16. SavePlayers(), stores the data to an external text file.
    The procedure SavePlayers():
    - takes the string of data to be stored to the text file as a parameter
    - takes the filename of the text file as a parameter
    - stores the string of data to the text file.

    Write the procedure SavePlayers()

17. A program corrects the grammar in a line of text. The text is read in from a text file.
    The function, getText, needs to:
    - take the file name as a parameter
    - open the file
    - read the line of data in the text file into one string
    - return the string of data.

    Write the function getText.

18. Write an algorithm that:
    - Adds together all the elements in the 2d array called *scores* shown below
    - scores[1,2] refers to the number 2
    - Should print 33

1	10	2
3	9	1
0	2	5

19. Write a program that:
    • asks the user to input a Car Make.
    • totals the number of cars sold by the car make inputted
    • outputs the calculated total in an appropriate message including the make name, for example: BMW sold a total of 520 cars!

Car Make	Model	Number of Sold
BMW	M1	20
BMW	320D	200
BMW	520D	300
Mercedes	A170	600

    cars[1,2] refers to “320D”

20. You are now ready to get grade 9!