Assignment 8

Dec 11 - Dec 15, 2015

Due in class on Monday, Dec 14th, in a binder.

1. Define a function that takes two arguments: [x, y] and returns the dot product of x and y.

2. Implement a function that takes a list of numbers and returns the sum of all the numbers in the list.

3. Write a program that sorts a list of names in alphabetical order.

4. Create a function that calculates the area of a circle given its radius.

5. Develop a program that checks if a given number is prime.

6. Design a function that takes a string and reverses it.

7. Write a program that finds the length of the longest palindrome in a given string.

8. Develop a function that determines if a given year is a leap year.

9. Create a program that calculates the factorial of a number.

10. Implement a function that checks if a given string is a palindrome.

11. Write a program that finds the greatest common divisor (GCD) of two numbers.

12. Develop a function that converts a given temperature from Celsius to Fahrenheit.

13. Create a program that finds the smallest common multiple (LCM) of two numbers.

14. Implement a function that calculates the distance between two points in a 2D plane.

15. Write a program that finds the area of a rectangle given its length and width.

16. Develop a function that calculates the perimeter of a given rectangle.

17. Create a program that determines if a given character is a vowel.

18. Implement a function that checks if a given number is odd or even.

19. Write a program that converts a given number from one base to another (e.g., from binary to decimal).

20. Develop a function that calculates the square root of a given number.

21. Create a program that finds the largest number in a given list of numbers.

22. Implement a function that checks if a given string contains a specific substring.

23. Write a program that calculates the factorial of a given number using recursion.

24. Develop a function that checks if a given string is a palindrome, ignoring spaces and punctuation.

25. Create a program that finds the prime factors of a given number.

26. Implement a function that checks if a given number is a perfect square.

27. Write a program that finds the smallest number in a given list of numbers.

28. Develop a function that checks if a given string contains a specific character.

29. Create a program that finds the average of a given list of numbers.

30. Implement a function that checks if a given year is a leap year using a different approach from the previous one.