**Assignment 11**

Due on 2020-04-15, 00:00:00

1. Develop a small inventory program that can manage a list of items. Each item should have a name, a description, and a quantity. The program should allow for adding new items, removing items, and displaying the inventory.

2. Write a program that calculates the area of a circle given the radius. The program should prompt the user for the radius and then display the area. Use the formula $A = \pi r^2$.

3. Implement a simple calculator that can perform basic arithmetic operations (addition, subtraction, multiplication, and division) on two numbers. The calculator should prompt the user for two numbers and an operator, and then display the result.

4. Create a program that checks if a given year is a leap year. A leap year occurs every 4 years, except for years that are divisible by 100 but not by 400. The program should prompt the user for a year and then display whether it is a leap year or not.

5. Develop a program that calculates the factorial of a number. The factorial of a number $n$ is the product of all positive integers less than or equal to $n$. The program should prompt the user for a number and then display the factorial.

6. Write a program that converts temperatures from Celsius to Fahrenheit and vice versa. The program should prompt the user for a temperature and a conversion direction (Celsius to Fahrenheit or Fahrenheit to Celsius) and then display the converted temperature.

7. Implement a program that simulates a simple街头快餐店的菜单. The menu should include items like burgers, fries, and soft drinks. The program should prompt the user for their order and then display the total cost.

8. Create a program that generates a random password consisting of 8 characters. The password should include a mix of uppercase letters, lowercase letters, and digits. The program should prompt the user to enter their desired password length and then display the generated password.

9. Develop a program that checks if a given string is a palindrome. A palindrome is a word that reads the same backward as forward. The program should prompt the user for a string and then display whether it is a palindrome or not.

10. Write a program that sorts a list of numbers in ascending order. The program should prompt the user for a list of numbers and then display the sorted list.

11. Implement a program that prints the first n terms of the Fibonacci sequence. The Fibonacci sequence is a series of numbers in which each number is the sum of the two preceding ones, usually starting with 0 and 1. The program should prompt the user for the number of terms to print and then display the sequence.

12. Create a program that simulates a simple game of rock-paper-scissors. The program should allow the user to play against the computer and display the outcome of each round.

13. Develop a program that converts a given date from one format to another. The program should prompt the user for a date in one format and then convert it to another format.

14. Write a program that calculates the average of a list of numbers. The program should prompt the user for a list of numbers and then display the average.

15. Implement a program that finds the missing number in a sequence. The program should prompt the user for a sequence of numbers and then display the missing number.

16. Create a program that encrypts a message using a simple substitution cipher. The program should prompt the user for a message and a key and then display the encrypted message.

17. Develop a program that parses and evaluates a simple mathematical expression. The program should prompt the user for a mathematical expression and then display the result.

18. Write a program that finds the greatest common divisor of two numbers. The program should prompt the user for two numbers and then display the greatest common divisor.

19. Implement a program that checks if a given number is prime. A prime number is a number that has exactly two distinct positive divisors: 1 and itself. The program should prompt the user for a number and then display whether it is prime or not.

20. Create a program that calculates the area of a regular polygon. The program should prompt the user for the number of sides and the length of each side and then display the area.

21. Develop a program that converts a given amount of money from one currency to another. The program should prompt the user for an amount and the conversion rate and then display the converted amount.

22. Write a program that checks if a given string is a valid email address. The program should prompt the user for a string and then display whether it is a valid email address.

23. Implement a program that sorts a list of strings in alphabetical order. The program should prompt the user for a list of strings and then display the sorted list.

24. Create a program that calculates the perimeter of a triangle. The program should prompt the user for the lengths of the three sides and then display the perimeter.

25. Develop a program that checks if a given number is a perfect square. A perfect square is an integer that is the square of another integer. The program should prompt the user for a number and then display whether it is a perfect square or not.

26. Write a program that finds the mode of a list of numbers. The mode is the number that appears most frequently in a list. The program should prompt the user for a list of numbers and then display the mode.

27. Implement a program that calculates the volume of a cube. The volume of a cube is the product of the length of one side with itself two times. The program should prompt the user for the length of a side and then display the volume.

28. Create a program that finds the least common multiple of two numbers. The least common multiple is the smallest positive integer that is divisible by both numbers. The program should prompt the user for two numbers and then display the least common multiple.

29. Develop a program that checks if a given number is a prime. A prime number is a number that has exactly two distinct positive divisors: 1 and itself. The program should prompt the user for a number and then display whether it is prime or not.

30. Write a program that calculates the power of a number. The program should prompt the user for a base number and an exponent, and then display the result.