

HOMEWORK 4 ITERATIONS

Problem 1. Write a function `countdown_to_zero(start)` that counts down from the given start number to 0, printing each number. If the starting number is less than or equal to 0, the function should return the message “Enter a positive number”.

Problem 2. Write a program that prints the U.S. presidential election years from 1992 to present day, knowing that such elections occur every 4 years.

Problem 3. Write a function `buzz(n)` that prints the numbers from 1 to n . For multiples of 5, print “Buzz” instead of the number.

Problem 4. Write a function called `negative_sum(a_list)` that takes a list as an input. The function will return the sum of all negative numbers in the list. For example

```
negative_sum([-1, 2, -3])
```

should return -4 .

Problem 5. Write a function called `even_positive_sum(a_list)` that takes a list of integers as an input. The function will return the sum of all positive even numbers in the list (a positive even number is a number that is both positive and even). For example

```
negative_sum([-1, 2, -4, 3, 6])
```

should return $2 + 6 = 8$.

Problem 6. Write a function called `minimal_element(a_list)` that takes a list as an input. The function will return the minimal element in the list. For example

```
negative_sum([1, 5, 2, 4])
```

should return 1.

Problem 7. Write a function called `is_square(n)` that checks whether a number is a square or not. A number n is called a square if $n = m^2$ for some integer m . For example, 9 is a square because $9 = 3^2$. On the other hand, 20 is not a square because there is no integer m such that $m^2 = 20$.

Problem 8. Write a program that prints out all perfect square numbers between 1 and 150. Please use the function `is_square(n)` in the previous problem.

Problem 9. Write a function called `sum_cube(n)` that calculates the sum of the cube of all numbers between 1 and n . For example, `sum_cube(1)` should return 1 because $1^3 = 1$. Similarly, `sum_cube(2)` should return 9 because $1^3 + 2^3 = 9$.

Problem 10. Write a function named `sum_of_digits(n)` that takes a positive integer n as input and returns the sum of its digits. For example

```
sum_of_digits(123)    # Should return 6
sum_of_digits(135)    # Should return 9
```