

Exercises

- 1) Write a program to check if a given string is a palindrome or not.
- 2) Write a program to count the number of vowels and consonants in a given string.
- 3) Write a program to find the second largest number in a given list.
- 4) Write a program to find the second smallest number in a given list.
- 5) Write a program to find the largest element in a given list.
- 6) Write a program to find the smallest element in a given list.
- 7) Write a program to check if a given number is a perfect square or not.
- 8) Write a program to check if a given string is a valid identifier or not.
- 9) Write a program to check if a given number is a multiple of 5 and 7.
- 10) Write a program to check if a given year is a leap year using the ternary operator.

Exercises and solution

- 1) Checking if a string is a palindrome or not:

```
string = input("Enter a string: ")

if string == string[::-1]:
    print("The string is a palindrome.")
else:
    print("The string is not a palindrome.")
```

2) Counting the number of vowels and consonants in a string:

```
string = input("Enter a string: ")
vowels = 0
consonants = 0

for i in string:
    if i.lower() in 'aeiou':
        vowels += 1
    elif i.isalpha():
        consonants += 1

print("Number of vowels:", vowels)
print("Number of consonants:", consonants)
```

3) Finding the second largest number in a list:

```
lst = [3, 6, 2, 8, 1, 9, 4]
largest = lst[0]
second_largest = lst[0]

for i in lst:
    if i > largest:
        second_largest = largest
        largest = i
    elif i > second_largest and i != largest:
        second_largest = i

print("The second largest number is:", second_largest)
```

4) Finding the second smallest number in a list:

```
lst = [3, 6, 2, 8, 1, 9, 4]
smallest = lst[0]
second_smallest = lst[0]

for i in lst:
```

```
    if i < smallest:
        second_smallest = smallest
        smallest = i
    elif i < second_smallest and i != smallest:
        second_smallest = i

print("The second smallest number is:", second_smallest)
```

5) Finding the largest element in a list:

```
lst = [3, 6, 2, 8, 1, 9, 4]
largest = lst[0]

for i in lst:
    if i > largest:
        largest = i

print("The largest element is:", largest)
```

6) Finding the smallest element in a list:

```
lst = [3, 6, 2, 8, 1, 9, 4]
smallest = lst[0]

for i in lst:
    if i < smallest:
        smallest = i

print("The smallest element is:", smallest)
```

7) Checking if a number is a perfect square or not:

```
import math

num = int(input("Enter a number: "))

if math.isqrt(num)**2 == num:
```

```
    print("The number is a perfect square.")
else:
    print("The number is not a perfect square.")
```

8) Checking if a string is a valid identifier or not:

```
identifier = input("Enter an identifier: ")

if identifier.isidentifier():
    print("The identifier is valid.")
else:
    print("The identifier is not valid.")
```

9) Checking if a number is a multiple of 5 and 7:

```
num = int(input("Enter a number: "))

if num % 5 == 0 and num % 7 == 0:
    print("The number is a multiple of 5 and 7.")
else:
    print("The number is not a multiple of 5 and 7.")
```

10) Checking if a year is a leap year using the ternary operator:

```
year = int(input("Enter a year: "))
leap = True if year % 4 == 0 and (year % 100 != 0 or year % 400 == 0) else
False
if leap:
    print(year, "is a leap year.")
else:
    print(year, "is not a leap year.")
```