

Manav Rachna International Institute of Research and Studies

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Question 1: Write a Python program to calculate the number of days between two dates.
Sample dates: (2014, 7, 2), (2014, 7, 11).

Ans:

```
from datetime import date
```

```
date1 = date(2014, 7, 2)
```

```
date2 = date(2014, 7, 11)
```

```
delta = date2 - date1
```

```
print(f"The number of days between the two dates is: {delta.days}")
```

OUTPUT:

```
The number of days between the two dates is: 9
```

Question 2 : Write a Python program that accepts an integer (n) and computes the value of $n+nn+nnn$.

Ans:

```
n_str = input("Enter a number (n): ")
```

```
n1 = int(n_str)
```

```
n2 = int(n_str + n_str)
```

```
n3 = int(n_str + n_str + n_str)
```

```
result = n1 + n2 + n3
```

```
print(f"The result of {n1} + {n2} + {n3} is: {result}")
```

OUTPUT:

```
Enter a number (n): 5  
The result of 5 + 55 + 555 is: 615
```

Question 3 : Write a Python program for accepting a number and depending on whether the number is even or odd, print out an appropriate message to the user.

ANS:

try:

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

```
if num % 2 == 0:
```

```
    print(f"The number {num} is Even.")
```

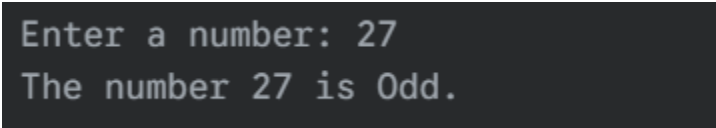
```
else:
```

```
    print(f"The number {num} is Odd.")
```

```
except ValueError:
```

```
    print("Invalid input. Please enter an integer.")
```

OUTPUT:



```
Enter a number: 27
The number 27 is Odd.
```

Question 4: Write a Python program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).

Ans:

```
result_list = []
```

```
for num in range(2000, 3201):
```

```
    if (num % 7 == 0) and (num % 5 != 0):
```

```
        result_list.append(str(num))
```

```
print(",".join(result_list))
```

OUTPUT:

```
2002,2009,2016,2023,2037,...,3178,3184,3192,3199
(Note: The full list is very long and has been truncated for brevity)
```

Question 5: Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum.

ANS:

```
def calculate_sum(a, b, c):
    if a == b == c:
        return (a + b + c) * 3
    else:
        return a + b + c
print(f"Sum of 1, 2, 3 is: {calculate_sum(1, 2, 3)}")
print(f"Sum of 5, 5, 5 is: {calculate_sum(5, 5, 5)}")
```

OUTPUT:

```
Sum of 1, 2, 3 is: 6
Sum of 5, 5, 5 is: 45
```

Question 6: Write a Python program to test whether a passed letter is a vowel or not.

ANS:

```
def check_vowel(letter):
    vowels = "aeiou"
    if letter.lower() in vowels:
        print(f"The letter '{letter}' is a Vowel.")
```

else:

```
print(f"The letter '{letter}' is a Consonant.")
```

```
check_vowel('a')
```

```
check_vowel('B')
```

OUTPUT:

```
The letter 'a' is a Vowel.  
The letter 'B' is a Consonant.
```

Question 7: Take a list, say for example this one: a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] and write the following program the following:

a) Instead of printing the elements one by one, make a new list that has all the elements less than 5 from this list in it and print out the new list.

b) Write this in one line of Python.

c) Ask the user for a number and return a list that contains only elements from the original list that are smaller than that number given by the user.

ANS:

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
```

```
new_list = []
```

```
for item in a:
```

```
    if item < 5:
```

```
        new_list.append(item)
```

```
print(f"a) New list with elements less than 5: {new_list}")
```

```
one_line_list = [item for item in a if item < 5]
print(f"b) One-line version: {one_line_list}")

try:
    user_num = int(input("c) Enter a number: "))
    user_list = [item for item in a if item < user_num]
    print(f" Elements smaller than {user_num}: {user_list}")
except ValueError:
    print("Invalid input.")
```

OUTPUT:

```
New list with elements less than 5: [1, 1, 2, 3]
One-line version: [1, 1, 2, 3]
Enter a number: 20
Elements smaller than 20: [1, 1, 2, 3, 5, 8, 13]
```

Question 8: Create a program that asks the user for a number and then prints out a list of all the divisors of that number.

ANS:

```
try:
    num = int(input("Enter a number to find its divisors: "))
    divisors = [i for i in range(1, num + 1) if num % i == 0]
    print(f"The divisors of {num} are: {divisors}")
except ValueError:
    print("Please enter a valid integer.")
```

OUTPUT:

```
Enter a number to find its divisors: 24
The divisors of 24 are: [1, 2, 3, 4, 6, 8, 12, 24]
```

Question 9: Take two lists and write a program that returns a list that contains only the elements that are common between the lists (without duplicates).

ANS:

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
```

```
b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]
```

```
common_elements = list(set(a) & set(b))
```

```
print(f"List a: {a}")
```

```
print(f"List b: {b}")
```

```
print(f"Common elements: {common_elements}")
```

OUTPUT:

```
List a: [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
List b: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]
Common elements: [1, 2, 3, 5, 8, 13]
```

Question 10: Ask the user for a string and print out whether this string is a palindrome or not.

ANS:

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

```
normalized_text = text.replace(" ", "").lower()
```

```
if normalized_text == normalized_text[::-1]:
```

```
    print(f'{text}' is a palindrome.")
```

```
else:
```

```
    print(f'{text}' is not a palindrome.")
```

OUTPUT:

```
Enter a string: A man a plan a canal Panama
'A man a plan a canal Panama' is a palindrome.
```

Question 11: Let's say I give you a list saved in a variable: `a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]`.

Write one line of Python that takes this list `a` and makes a new list that has only the even elements of this list in it.

ANS:

```
a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

```
even_list = [num for num in a if num % 2 == 0]
```

```
print(f"Original list: {a}")
```

```
print(f"List with only even numbers: {even_list}")
```

OUTPUT:

```
Original list: [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
List with only even numbers: [4, 16, 36, 64, 100]
```

Question 12: Generate a random number between 1 and 9 (including 1 and 9). Ask the user to guess the number, then tell them whether they guessed too low, too high, or exactly right.

Ans:

```
import random
```

```
secret_number = random.randint(1, 9)
```

```
guess = 0
```

```
print("I'm thinking of a number between 1 and 9.")
```

```
while guess != secret_number:
```

```
    try:
```

```
        guess = int(input("Guess the number: "))
```

```
        if guess < secret_number:
```

```
            print("Too low! Try again.")
```

```
        elif guess > secret_number:
```

```
            print("Too high! Try again.")
```

```
        else:
```

```
            print("Exactly right! You guessed it!")
```

```
    except ValueError:
```

```
        print("Invalid input. Please enter a number.")
```

OUTPUT:

I'm thinking of a number between 1 and 9.

Guess the number: 5

Too high! Try again.

Guess the number: 3

Too low! Try again.

Guess the number: 4

Exactly right! You guessed it!