FINLATICS NOTES

Exception handling in Python lets you manage errors and unexpected situations in your code, preventing crashes and making programs more robust. This is done using `try`, `except`, `else`, and `finally` blocks:

- Common exceptions:
  - `SyntaxError`: Code structure mistakes (e.g., missing parenthesis).
  - `TypeError`: Wrong data type operations (e.g., adding string to integer).
  - `ValueError`: Correct type, but invalid value (e.g., converting "zero" to int).
  - `IndexError`: Accessing out-of-range list indices.
  - `ZeroDivisionError`: Dividing by zero.
  - `IndentationError`: Incorrect code indentation.
  - `AttributeError`: Accessing non-existent attributes or methods.
- How it works:
  - Code that might error goes in a `try` block.
  - Handle specific errors in `except` blocks.
  - `else` block runs if no error occurs.
  - `finally` block always runs (cleanup, etc.).
- Example:

```
try:
    x = int(input("Enter a number: "))
    result = 10 / x
except ValueError:
    print("Invalid input.")
except ZeroDivisionError:
    print("Cannot divide by zero.")
else:
    print("Division result:", result)
finally:
    print("This always runs.")
```

Exception handling improves reliability and user experience by catching and managing errors gracefully.

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Questions:

1. Write a program that prompts the user to input a year, checks whether it's a leap year or not, and then prints the result.
2. Write a Python program that prompts the user to input a word. The program should then determine and output the count of vowels (a, e, i, o, u) in the provided word. Additionally, consider that the word can be in either uppercase or lowercase.
3. Write a Python program that allows the user to input a list of 6 names. After receiving the list, the program should print only the names that start with the letter 'a', regardless of whether the letter is uppercase or lowercase.
4. Write a Python program that takes a list of 10 integers as input. Your program should iterate through the list and print the following: For each even number encountered, print the number squared. For each odd number encountered, print the number cubed.
5. Imagine you're ordering flowers from a local delivery service. They offer a selection of beautiful flowers, including roses. Each rose is priced at Rs. 10. Along with your choice of roses, you'll need to provide the count of roses you wish to order and the delivery distance. The delivery charges are as follows: Rs. 25 for distances within 5 kilometers, Rs. 50 for distances between 5 and 10 kilometers, and Rs. 75 for distances greater than 10 kilometers. Write a Python program that prompts the user to enter the count of roses and the delivery distance, then calculates and displays the total price to pay, including both the cost of roses and the delivery charge.

Q1 Check Leap Year

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

This code checks the standard leap year rules: divisible by 4 but not 100, or divisible by 400

Q2 Count Vowels in a Word Case-Insensitive)

```
word = input("Enter a word: ")
vowels = 'aeiou'
count = 0
for char in word.lower():
    if char in vowels:
        count += 1
print(f"Number of vowels: {count}")
```

This program converts the input to lowercase and counts each vowel

Q3 Print Names Starting with 'a' Case-Insensitive)

```
names = []
for i in range(6):
    name = input(f"Enter name {i+1}: ")
    names.append(name)
print("Names starting with 'a':")
for name in names:
    if name.lower().startswith('a'):
        print(name)
```

The `startswith()` method with `.lower()` ensures case-insensitive matching

Q4 Square Even Numbers, Cube Odd Numbers

```
numbers = []
for i in range(10):
    num = int(input(f"Enter integer {i+1}: "))
    numbers.append(num)

for num in numbers:
    if num % 2 == 0:
        print(num ** 2)
    else:
        print(num ** 3)
```

Even numbers are squared, odd numbers are cubed

Q5 Rose Order Total Price Calculation

```
rose_count = int(input("Enter the number of roses: "))
distance = float(input("Enter delivery distance (in km): "))

rose_price = rose_count * 10

if distance &lt;= 5:
    delivery_charge = 25
elif distance &lt;= 10:
    delivery_charge = 50
else:
    delivery_charge = 75

total_price = rose_price + delivery_charge
print(f"Total price to pay: Rs. {total_price}")
```

This program calculates the total cost based on the number of roses and delivery distance as per the rules provided.