**Experiment 14**

**Aim:** Write a Python program to create a menu driven application which should cover all built in exception handling in Python.

**Program:**

**MDP.py**

import io

def handle\_exception(exception\_type, message):

try:

raise exception\_type(message)

except exception\_type as e:

print(f"Error ({exception\_type.\_\_name\_\_}): {e}")

while True:

print("\nException Handling Menu:")

print("1. BaseException\t2. Exception\t\t3. ArithmeticError")

print("4. LookupError\t\t5. AssertionError \t6. AttributeError")

print("7. BufferError \t\t8. ZeroDivisionError \t9. KeyError ")

print("10. ValueError \t\t11.Exit")

ch = input("Select an Exception (or '11' to exit): ")

if ch == '11':

print("Exiting the program.")

break

try:

ch = int(ch)

except ValueError:

print("Invalid choice. Please enter a number.")

continue

if 1 <= ch <= 11:

if ch == 1:

try:

print("When: a = -10")

a = -10

raise BaseException("No negative number is allowed!\n")

except BaseException as e:

print(e)

elif ch == 2:

try:

print("Raising an Exception!")

raise Exception("This is an Exception!\n")

except Exception as e:

print(e)

elif ch == 3:

try:

print("When: x = 1 / 0")

x = 1 / 0

except ArithmeticError as e:

print("Error: ", e)

print("An arithmetic error occurred!\n")

elif ch == 4:

try:

list = [1, 2, 3]

print("what is at index 3? ", list)

print(list[3])

except LookupError as e:

print("Error: ", e)

print("A lookup error occurred, no index found!\n")

elif ch == 5:

try:

x = 1

print("Assert x=0 but x=1:")

assert x == 0, "x is not zero!\n"

except AssertionError as e:

print("Error: ", e)

elif ch == 6:

try:

x = 1

print("When x=1, trying to append(5) an integer")

print(x.append(5))

except AttributeError as e:

print("Error: ", e)

print("An attribute error occurred!")

elif ch == 7:

try:

# Create byte array with string 'Hello'.

array = io.BytesIO(b'Hello')

# Create a read-write copy of the bytearray.

view = array.getbuffer()

# Add string ' world!' to existing bytearray.

array.write(b' world!')

except BufferError as error:

print(f"BufferError: {error}")

else:

print("Buffer updated successfully!")

elif ch == 8:

try:

# Dividing by zero to raise a ZeroDivisionError

result = 10 / 0

except ZeroDivisionError as e:

print("Error:", e)

print("Cannot divide by zero!\n")

elif ch == 9:

try:

# Trying to access a key that doesn't exist in a dictionary

my\_dict = {"a": 1, "b": 2}

print("Accessing a key that doesn't exist:", my\_dict['c'])

except KeyError as e:

print("Error:", e)

print("Key does not exist in the dictionary!\n")

elif ch == 10:

try:

# Trying to convert a string to an integer, which is not possible

value = "hello"

print("Trying to convert 'hello' to an integer:", int(value))

except ValueError as e:

print("Error:", e)

print("Cannot convert 'hello' to an integer!\n")

else:

print("Invalid choice. Please enter a number between 1 and 11.")

**Output:**

D:\Python Programs>python MDP.py

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 1

When: a = -10

No negative number is allowed!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 2

Raising an Exception!

This is an Exception!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 3

When: x = 1 / 0

Error: division by zero

An arithmetic error occurred!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 4

what is at index 3? [1, 2, 3]

Error: list index out of range

A lookup error occurred, no index found!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 5

Assert x=0 but x=1:

Error: x is not zero!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 6

When x=1, trying to append(5) an integer

Error: 'int' object has no attribute 'append'

An attribute error occurred!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 7

BufferError: Existing exports of data: object cannot be re-sized

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 8

Error: division by zero

Cannot divide by zero!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 9

Error: 'c'

Key does not exist in the dictionary!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 10

Error: invalid literal for int() with base 10: 'hello'

Cannot convert 'hello' to an integer!

Exception Handling Menu:

1. BaseException 2. Exception 3. ArithmeticError

4. LookupError 5. AssertionError 6. AttributeError

7. BufferError 8. ZeroDivisionError 9. KeyError

10. ValueError 11.Exit

Select an Exception (or '11' to exit): 11

Exiting the program.

**Conclusion:** Hence we have implemented multithreaded applications in Python.