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Python – Experiment 4

AIM : Python applications using modules, packages, multithreading and exception handling

LO - 4 : Create Python applications using modules, packages, multithreading and exception handling.

a) Creating User-defined modules/packages and import them in a program

Code:

```
def display():
    print("This is a user defined package")

def calc():
    c = eval(input("Enter the operation to be performed: "))
    print(c)
```

```
import exp
exp.display()
exp.calc()
```

Output:

```
This is a user defined package
Enter the operation to be performed: 3+2
5
```

b) Creating user defined multithreaded application with thread synchronization and deadlocks

Code:

```
import threading
x = 0
def increment():
    global x
    x += 1
```

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```
def thread_task():
    for _ in range(1000):
        increment()
def main_task():
    global x
    x = 0
    t1 = threading.Thread(target=thread_task)
    t2 = threading.Thread(target=thread_task)
    t1.start()
    t2.start()
    t1.join()
    t2.join()
if __name__ == "__main__":
    for i in range(10):
        main_task()
        print("Iteration {0}: x = {1}".format(i, x))
```

Output:

```
Iteration 0: x = 2000
Iteration 1: x = 2000
Iteration 2: x = 2000
Iteration 3: x = 2000
Iteration 4: x = 2000
Iteration 5: x = 2000
Iteration 6: x = 2000
Iteration 7: x = 2000
Iteration 8: x = 2000
Iteration 9: x = 2000
```

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c) Creating a menu driven application which should cover all the exceptions in python.

Code:

while True:

```
  print("1.ZeroDivisionError\n 2.NameError\n 3.SyntaxError\n 4.IndexError\n5.KeyError\n
6.TypeError\n 7.ImportError\n 0.Exit")
  a = int(input("Enter your choice: "))
  if a == 1:
      try:
          print(1/0)
      except ZeroDivisionError as e:
          print("ZeroDivisionError:", e)
  elif a == 2:
      try:
          print(b.name)
      except NameError as e:
          print("NameError")
  elif a == 3:
      try:
          print(1+"1")
      except SyntaxError as e:
          print("SyntaxError :",e)
  elif a == 4:
      try:
          print(a[10])
      except IndexError as e:
          print("IndexError :",e)
  elif a == 5:
      try:
          print(a["name"])
      except KeyError as e:
          print("KeyError :",e)
  elif a == 6:
      try:
          print(int("a"))
      except TypeError as e:
          print("TypeError :",e)
```

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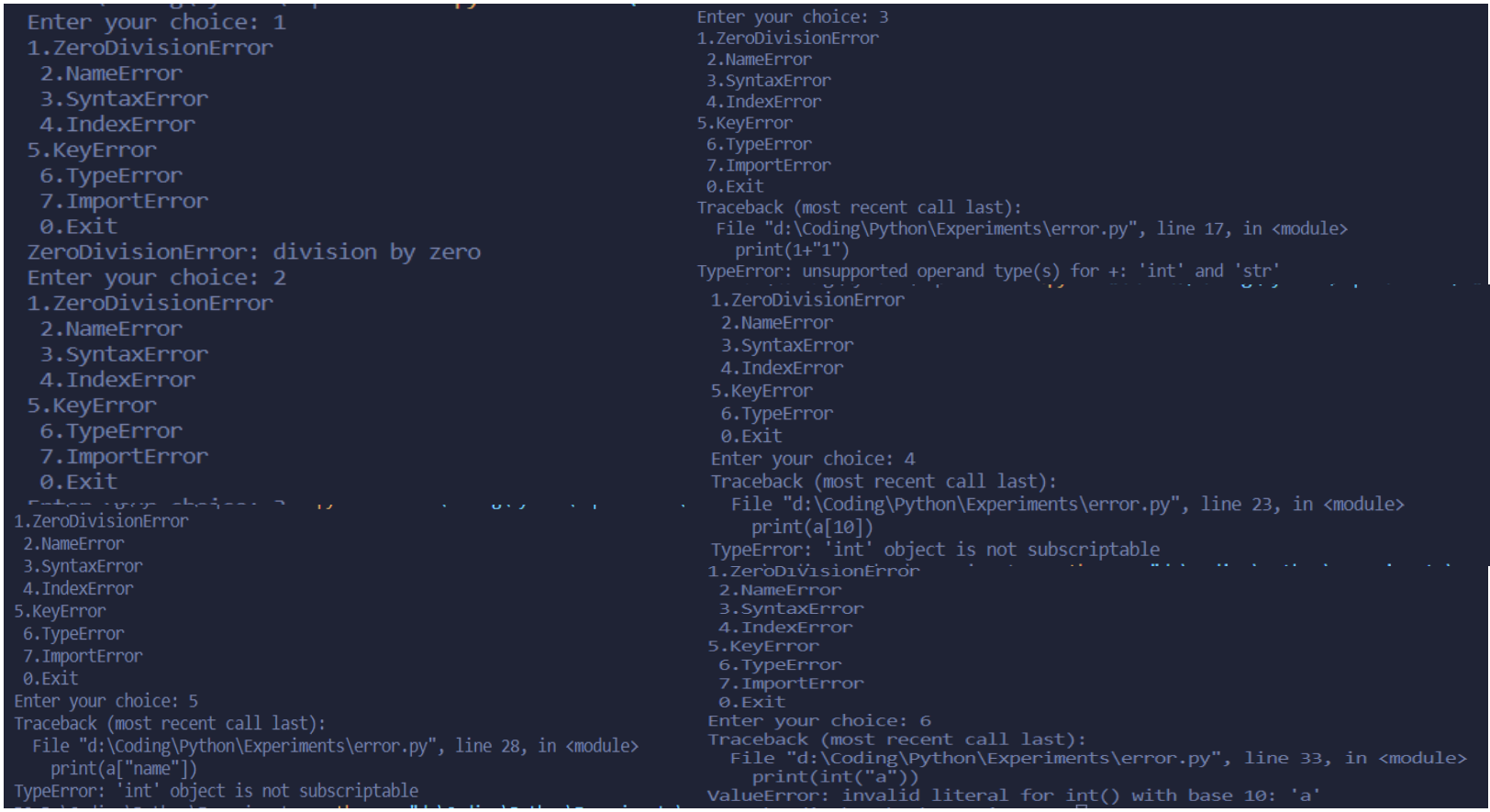
```
    elif a == 7:
        try:
            import soham
        except  ImportError as e:
            print("ImportError :",e)
    elif a == 0:
            break
    else:
        print("Invalid choice")
```

Output:



Conclusion:

From this experiment we have learnt the multithreading and also how to import user defined packages.