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14. WAP to implement built-in exceptions

Code:

```
try:
    a = 10/0
    print (a)
    except ArithmeticError:
    print ("This statement is raising an arithmetic exception.")
    else:
    print ("Success.")
```

Output:

```
This statement is raising an arithmetic exception.
```

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15. WAP to implement user defined exception to display message if account balance is below 1000 while withdrawing amount

Code:

```
class Bank_Account:

def __init__(self):
self.balance = 1000
print ('Hello, welcome to the Deposit & Withdrawal Machine')

def withdraw(self):
amount = float(input('Enter amount to be Withdrawn: '))
if self.balance >= amount:
 self.balance -= amount
 if self.balance <= 1000:
 self.balance += amount
 print ('If account balance is less than Rs.1000, then you can not withdraw amount.')

  else:
     print ('\n You Withdrew:', amount)
  else:
     print ('\n Insufficient balance!!!')

def display(self):
     print ('\n Net Available Balance=', self.balance)

s = Bank_Account()
s.withdraw()
s.display()
```

Output:

```
Hello, welcome to the Deposit & Withdrawal Machine
Enter amount to be withdrawn: 3000

Insufficient balance!!!

Net Available Balance= 1000
```

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16. Write a module to implement following arithmetic functions : add, subtract, multiply & division , log , pow, sqrt, sin, cost tan. Write a menu driven program to use these functions.

Code:

```
import math
p = math.pi/6

def show_choices():
print('\nMenu')
print('1. Add')
print('2. Sutract')
print('3. Multiply')
print('4. Divide')
print('5. Sin')
print('6. Cos')
print('7. Tan')
print('8. Log')
print('9. Pow')
print('10. Sqrt')


def add(x, y):
return x + y

def subtract(x, y):
return x - y

def multiply(x, y):
return x * y

def divide(x, y):
return x / y

def sin(p):
return math.sin(p)

def cos(p):
return math.cos(p)

def tan(p):
```

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```
return math.tan(p)

def log(x):
return math.log(x)

def pow(x,y):
return math.pow(x,y)

def sqrt(x):
return math.sqrt(x)


def main():
while(True):
show_choices()
choice = input('Enter choice(1-10): ')
if choice == '1':
x = int(input('Enter first number: '))
y = int(input('Enter second number: '))
print('Sum =', add(x, y))

elif choice == '2':
x = int(input('Enter first number: '))
y = int(input('Enter second number: '))
print('Difference =', subtract(x, y))

elif choice == '3':
x = int(input('Enter first number: '))
y = int(input('Enter second number: '))
print('Product =', multiply(x, y))

elif choice == '4':
x = int(input('Enter first number: '))
y = int(input('Enter second number: '))
if y == 0:
print('Error!! divide by zero')
else:
print('Quotient =', divide(x, y))

elif choice == '5':
print ("The value of sine of pi/6 is : ",math.sin(p))
elif choice == '6':
```

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```
print ("The value of cosine of pi/6 is : ",math.cos(p))
elif choice == '7':
print ("The value of tangent of pi/6 is : ",math.tan(p))
elif choice == '8':
x = int(input('Enter first number: '))
print ("Natural alogarithm of x is : ",math.log(x))
elif choice == '9':
x = int(input('Enter first number: '))
y = int(input('Enter second number: '))
print ("Value of x raised to the power of y is: ",math.pow(x,y))
elif choice == '10':
x = int(input('Enter first number: '))
print ("Square root of x is: ",math.sqrt(x))
else :
print('Invalid Choice')
exit();
main()
```

Output:

```
C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program>python Arithmetic_Functions.py

 Menu
 1. Add
 2. Sutract
 3. Multiply
 4. Divide
 5. Sin
 6. Cos
 7. Tan
 8. Log
 9. Pow
 10. Sqrt
 Enter choice(1-10): 1
 Enter first number: 30
 Enter second number: 20
 Sum = 50
```

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Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 2
Enter first number: 20
Enter second number: 4
Difference = 16

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 3
Enter first number: 10
Enter second number: 20
Product = 200

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log

9. Pow
10. Sqrt
Enter choice(1-10): 4
Enter first number: 10
Enter second number: 5
Quotient = 2.0

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 5
The value of sine of pi/6 is : 0.49999999999999994

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 6
The value of cosine of pi/6 is : 0.8660254037844387

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos

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7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 7
The value of tangent of pi/6 is : 0.5773502691896257

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 8
Enter first number: 5
Natural alogarithm of x is : 1.6094379124341003

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 9
Enter first number: 5
Enter second number: 6
Value of x raised to the power of y is: 15625.0

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```
Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 10
Enter first number: 7
Square root of x is:  2.6457513110645907

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt

Menu
1. Add
2. Sutract
3. Multiply
4. Divide
5. Sin
6. Cos
7. Tan
8. Log
9. Pow
10. Sqrt
Enter choice(1-10): 11

Invalid Choice
```

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17. Write A Program to display date in following format “Friday, 23 April 2017”

Code:

```
import time
import datetime

print(datetime.date.today().strftime("%A") ,datetime.date.today().strftime("%W")
,datetime.date.today().strftime("%B") ,datetime.date.today().strftime("%Y"))
```

Output:

```
C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Pro
grams_1to5\Python_Program>python Date_Format.py

Friday 26 July 2022
```

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18. Write a program to display number of days remaining upto 31 st Dec 2022

Code:

```
from datetime import date
f_date = date.today()
l_date = date(2022, 12, 31)
diff_days = l_date - f_date
print("Number of days remaining are:", diff_days.days)
```

Outout:

```
C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program>python Days_Remaining.py

Number of days remaining are: 183
```

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20 Write a program for addition,subtraction, multiplication of two matrices using numpy

C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program>python Arithmatic_Numpy.py
Traceback (most recent call last):
  File "C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program\Arithmatic_Numpy.py", line 2, in <module>
    import numpy as np
ModuleNotFoundError: No module named 'numpy'

C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program>**pip install numpy**
WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
Collecting numpy
  Downloading numpy-1.23.0-cp310-cp310-win_amd64.whl (14.6 MB)
     |████████████████████████████████| 14.6 MB 930 kB/s
WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
Installing collected packages: numpy
  WARNING: Failed to write executable - trying to use .deleteme logic
ERROR: Could not install packages due to an OSError: [WinError 2] The system cannot find the file specified: 'C:\\Python310\\Scripts\\f2py.exe' -> 'C:\\Python310\\Scripts\\f2py.exe.deleteme'

WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python310\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python310\lib\site-packages)
WARNING: You are using pip version 21.2.4; however, version 22.1.2 is available.

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You should consider upgrading via the 'C:\Python310\python.exe -m pip install --upgrade pip' command.

Code:

```
# importing numpy as np
import numpy as np


# creating first matrix
A = np.array([[1, 2], [3, 4]])

# creating second matrix
B = np.array([[4, 5], [6, 7]])

print("Printing elements of first matrix")
print(A)
print("Printing elements of second matrix")
print(B)

# adding two matrix
print("Addition of two matrix")
print(np.add(A, B))
```

Output:

```
C:\Users\NadeemShaikhMj\Documents\MCA\Python\My_Programs\Python_Programs_1to5\Python_Program>python Arithmatic_Numpy.py

 Printing elements of first matrix
 [[1 2]
 [3 4]]
Printing elements of second matrix
 [[4 5]
 [6 7]]
Addition of two matrix
 [[ 5  7]
 [ 9 11]]
```