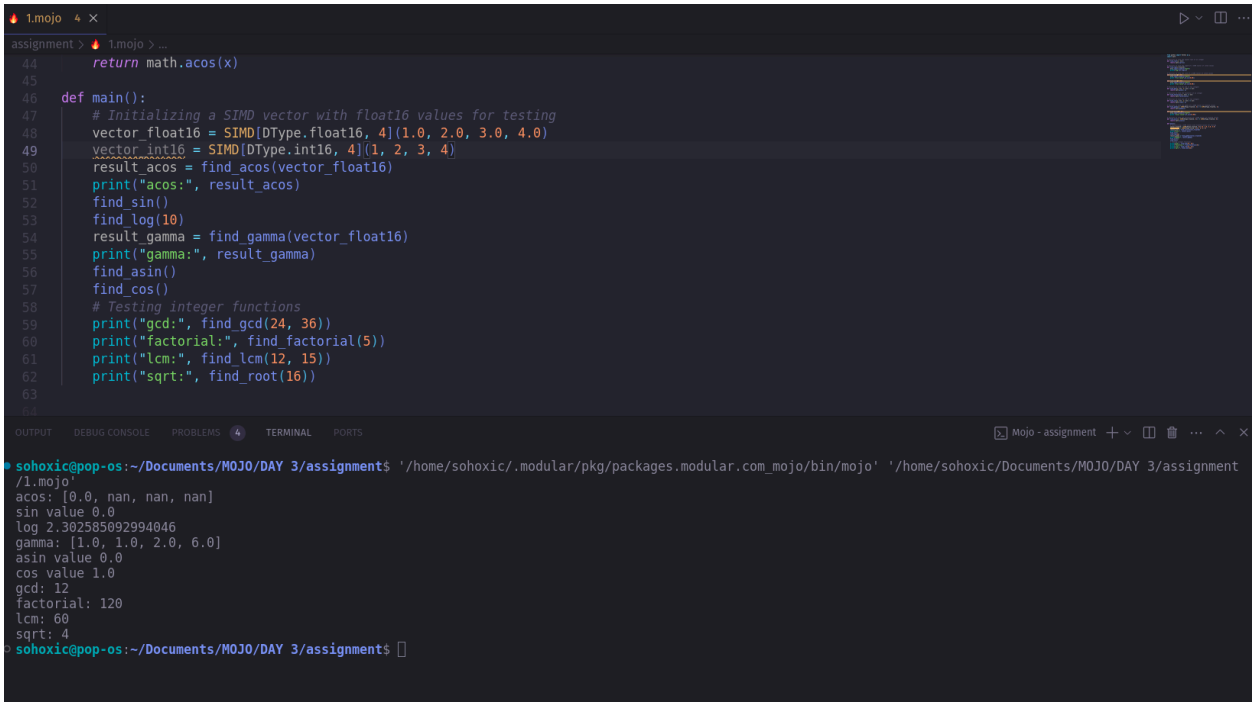
1.

```
from python import Python as p
import math

# Function to find the square root of an integer
def find_root(x: Int):
    return math.sqrt(x)

# Function to find the log10 of a SIMD vector of int16 values
def find_log(x:Float16):
    mt=p.import_module("math")
    print("log",mt.log(x))

# Function to find the sine of a SIMD vector of int16 values
def find_sin(x=0.00):
    mt=p.import_module("math")
    print ("sin value",mt.sin(0.00))

def find_cos(x=0.00):
    mt=p.import_module("math")
    print ("cos value",mt.cos(0.00))

# Function to find the GCD of two integers
def find_gcd(x: Int, y: Int) -> Int:
    return math.gcd(x, y)

# Function to find the factorial of an integer
def find_factorial(x: Int) -> Int:
    return math.factorial(x)

# Function to find the LCM of two integers
def find_lcm(x: Int, y: Int) -> Int:
    return math.lcm(x, y)

# Function to find the gamma of a SIMD vector of float16 values
def find_gamma(x: SIMD[DType.float16, 4]) -> SIMD[DType.float16, 4]:
    return math.gamma(x)

def find_asin(x=0.00):
    mt=p.import_module("math")
```

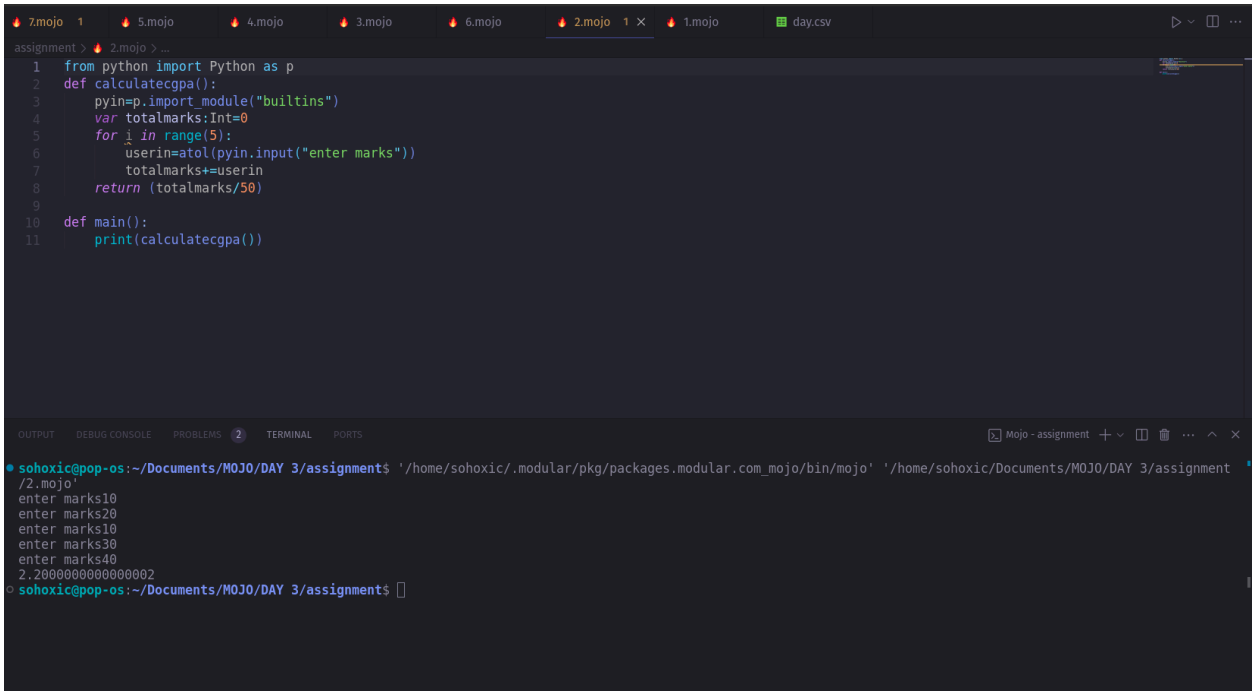
```
    print ("asin value",mt.asin(0.00))

# Function to find the arccosine of a SIMD vector of float16 values
def find_acos(x: SIMD[DType.float16, 4]) -> SIMD[DType.float16, 4]:
    return math.acos(x)

def main():
    # Initializing a SIMD vector with float16 values for testing
    vector_float16 = SIMD[DType.float16, 4](1.0, 2.0, 3.0, 4.0)
    vector_int16 = SIMD[DType.int16, 4](1, 2, 3, 4)
    result_acos = find_acos(vector_float16)
    print("acos:", result_acos)
    find_sin()
    find_log(10)
    result_gamma = find_gamma(vector_float16)
    print("gamma:", result_gamma)
    find_asin()
    find_cos()
    # Testing integer functions
    print("gcd:", find_gcd(24, 36))
    print("factorial:", find_factorial(5))
    print("lcm:", find_lcm(12, 15))
    print("sqrt:", find_root(16))
```

Output:

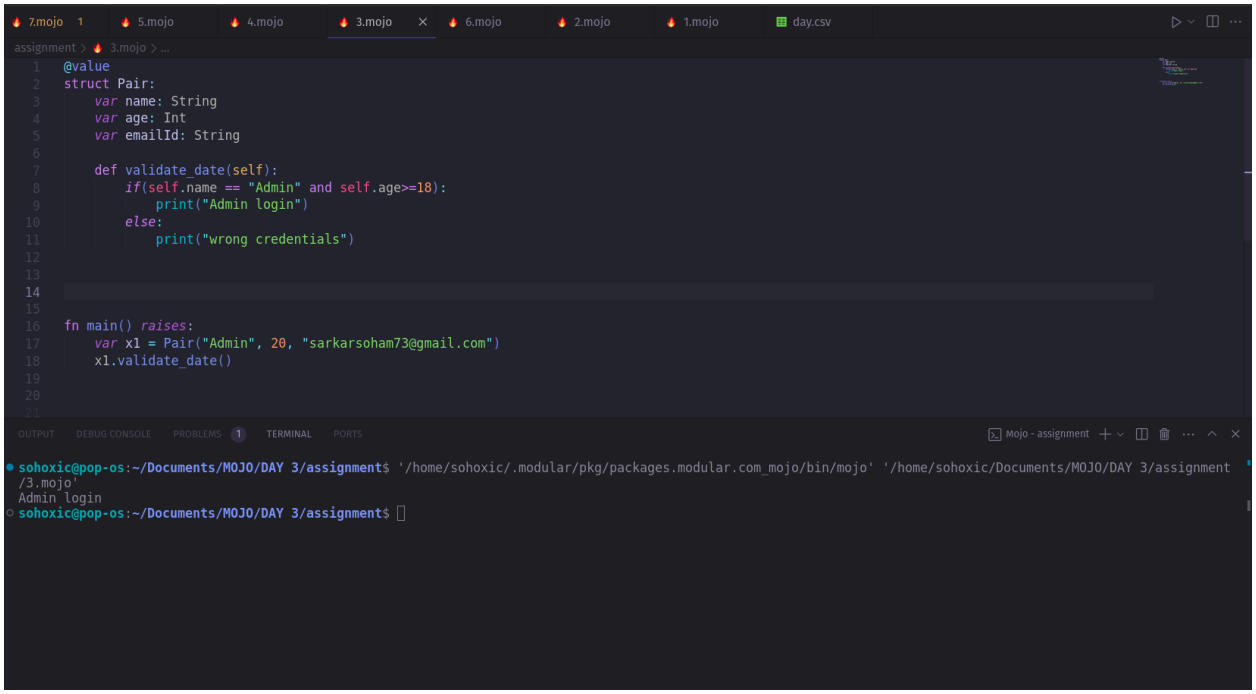
```
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment
/1.mojo'
acos: [0.0, nan, nan, nan]
sin value 0.0
log 2.302585092994046
gamma: [1.0, 1.0, 2.0, 6.0]
asin value 0.0
cos value 1.0
gcd: 12
factorial: 120
lcm: 60
sqrt: 4
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$
```


1.mojo 4
assignment > 1.mojo > ...
return math.acos(x)
def main():
# Initializing a SIMD vector with float16 values for testing
vector_float16 = SIMD[DType.float16, 4](1.0, 2.0, 3.0, 4.0)
vector_int16 = SIMD[DType.int16, 4](1, 2, 3, 4)
result_acos = find_acos(vector_float16)
print("acos:", result_acos)
find_sin()
find_log(10)
result_gamma = find_gamma(vector_float16)
print("gamma:", result_gamma)
find_asin()
find_cos()
# Testing integer functions
print("gcd:", find_gcd(24, 36))
print("factorial:", find_factorial(5))
print("lcm:", find_lcm(12, 15))
print("sqrt:", find_root(16))
OUTPUT DEBUG CONSOLE PROBLEMS 4 TERMINAL PORTS
Mojo - assignment
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/1.mojo'
acos: [0.0, nan, nan, nan]
sin value 0.0
log 2.302585092994046
gamma: [1.0, 1.0, 2.0, 6.0]
asin value 0.0
cos value 1.0
gcd: 12
factorial: 120
lcm: 60
sqrt: 4
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$

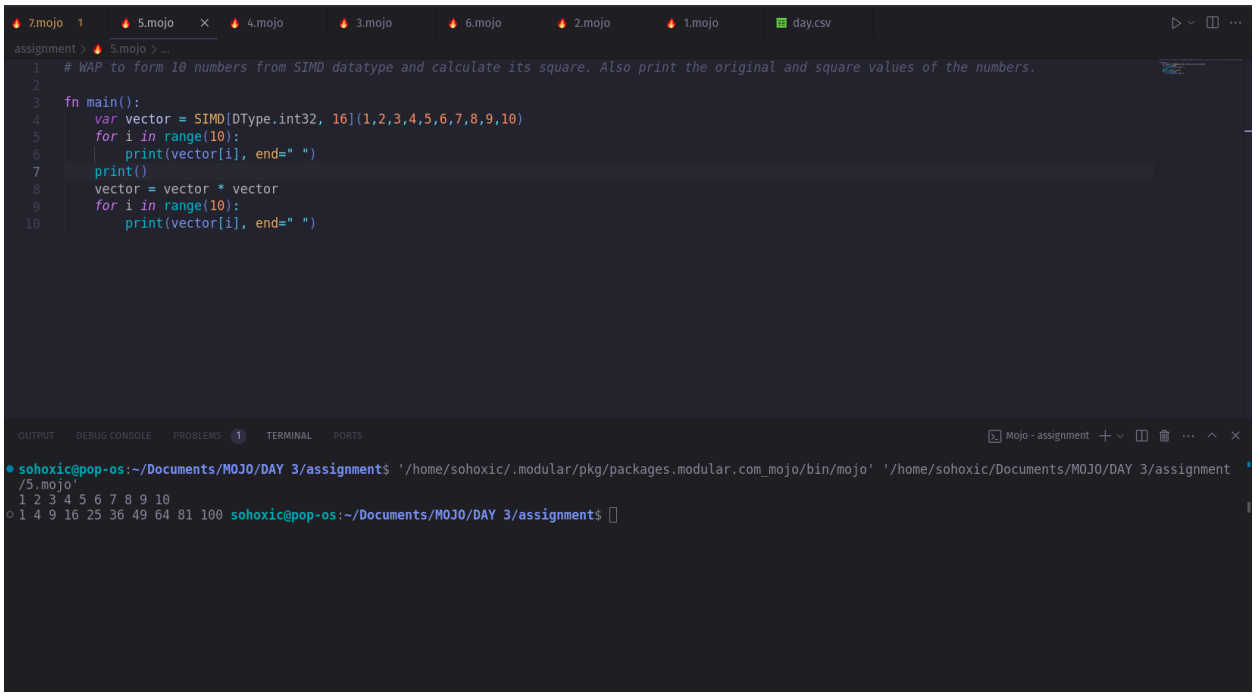
2.


7.mojo 1
5.mojo
4.mojo
3.mojo
6.mojo
2.mojo 1
1.mojo
day.csv
assignment > 2.mojo > ...
from python import Python as p
def calculatecgpa():
pyin=p.import_module("builtins")
var totalmarks:Int=0
for i in range(5):
userin=atol(pyin.input("enter marks"))
totalmarks+=userin
return (totalmarks/50)
def main():
print(calculatecgpa())
OUTPUT DEBUG CONSOLE PROBLEMS 2 TERMINAL PORTS
Mojo - assignment
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/2.mojo'
enter marks10
enter marks20
enter marks10
enter marks30
enter marks40
2.2000000000000002
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$

3.


7.mojo 1
5.mojo
4.mojo
3.mojo
6.mojo
2.mojo
1.mojo
day.csv
assignment > 3.mojo > ...
@value
struct Pair:
var name: String
var age: Int
var emailId: String
def validate_date(self):
if(self.name == "Admin" and self.age>=18):
print("Admin login")
else:
print("wrong credentials")
fn main() raises:
var x1 = Pair("Admin", 20, "sarkarsoham73@gmail.com")
x1.validate_date()
OUTPUT
DEBUG CONSOLE
PROBLEMS 1
TERMINAL
PORTS
Mojo - assignment
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/3.mojo'
Admin login
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$

4.


7.mojo 1
5.mojo
4.mojo
3.mojo
6.mojo
2.mojo
1.mojo
day.csv
assignment > 5.mojo > ...
WAP to form 10 numbers from SIMD datatype and calculate its square. Also print the original and square values of the numbers.
fn main():
var vector = SIMD[DType.int32, 16](1,2,3,4,5,6,7,8,9,10)
for i in range(10):
print(vector[i], end=" ")
print()
vector = vector * vector
for i in range(10):
print(vector[i], end=" ")
OUTPUT
DEBUG CONSOLE
PROBLEMS 1
TERMINAL
PORTS
Mojo - assignment
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/5.mojo'
1 2 3 4 5 6 7 8 9 10
1 4 9 16 25 36 49 64 81 100 sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$

5.

```mojo
# WAP to form 10 numbers from SIMD datatype and calculate its square. Also print the original and square values of the numbers.

fn main():
    var vector = SIMD[DType.int32, 16](1,2,3,4,5,6,7,8,9,10)
    for i in range(10):
        print(vector[i], end=" ")
    print()
    vector = vector * vector
    for i in range(10):
        print(vector[i], end=" ")
```

```
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/5.mojo'
1 2 3 4 5 6 7 8 9 10
1 4 9 16 25 36 49 64 81 100 sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$
```

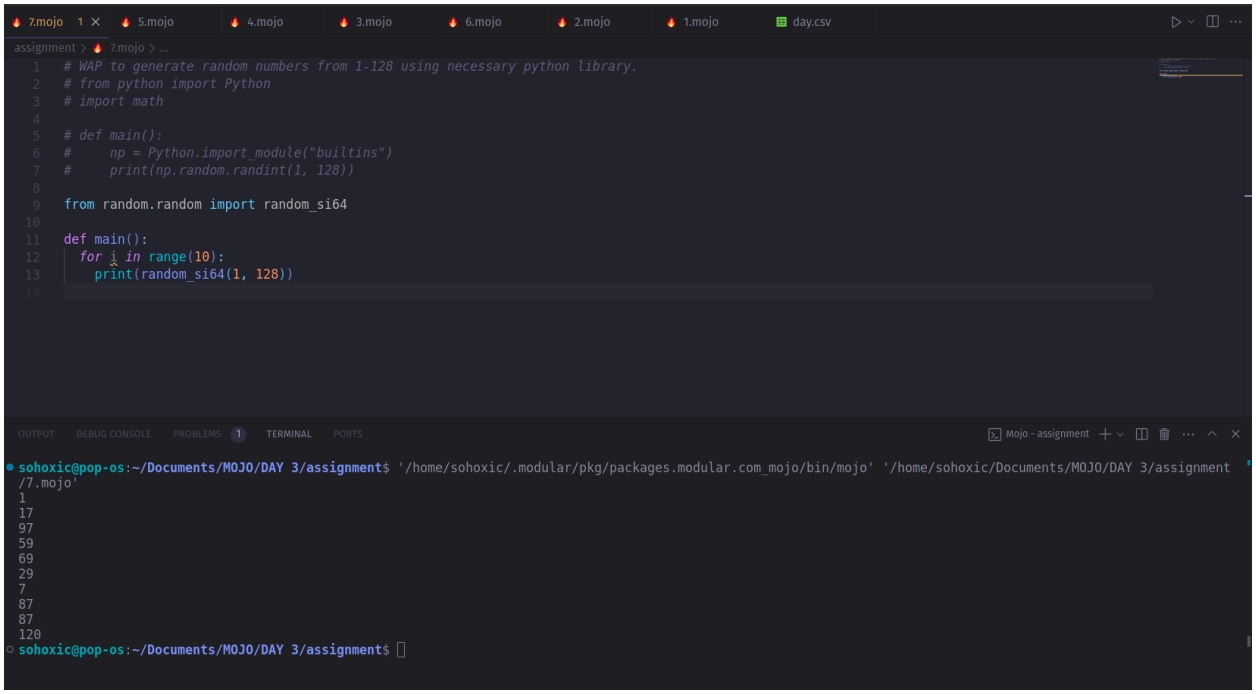
6.

```
Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
```

```mojo
from python import Python as p

def main():
    pd = p.import_module("pandas")
    data = pd.read_csv("day.csv")
    print(data)
```

```
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/6.mojo'
Empty DataFrame
Columns: [Monday,  Tuesday,  Wednesday,  Thursday,  Friday,  Saturday,  Sunday]
Index: []
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$
```

7.


7.mojo 1
5.mojo
4.mojo
3.mojo
6.mojo
2.mojo
1.mojo
day.csv
assignment > 7.mojo > ...
# WAP to generate random numbers from 1-128 using necessary python library.
# from python import Python
# import math
# def main():
#   np = Python.import_module("builtins")
#   print(np.random.randint(1, 128))
from random.random import random_si64
def main():
for i in range(10):
print(random_si64(1, 128))
OUTPUT
DEBUG CONSOLE
PROBLEMS 1
TERMINAL
PORTS
Mojo - assignment
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$ '/home/sohoxic/.modular/pkg/packages.modular.com_mojo/bin/mojo' '/home/sohoxic/Documents/MOJO/DAY 3/assignment/7.mojo'
1
17
97
59
69
29
7
87
87
120
sohoxic@pop-os:~/Documents/MOJO/DAY 3/assignment$