



INFORMATICS
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Module Leader : **Mr.Nishan Saliya Harankahawa**

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Student Name : **Srisivakumar Thanushan**

Student Id : **20240138**

Group : **C**

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S.Thanushan

(20240138)

Abstract

“Math bro” mathematical game designed to enhance arithmetic skills, particularly addition and subtraction. Users can select between two difficulty levels: easy and hard. The easy mode presents questions with operands ranging from 0 to 10, while the hard mode includes multiplication and operands from 0 to 20.

The game interface provides a user-friendly experience, allowing players to attempt multiple questions within a single session. Upon completion of each session, the results, including correct and incorrect answers, are logged to a text file. This feature enables players to track their progress and identify areas for improvement.

By combining interactive gameplay with detailed session logs, this math game offers a valuable tool for both educational and recreational purposes.

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1. Python Code

```
#Import items
import random
from datetime import datetime
import sys

G=[]#Final out
rand = random.randrange(100,999)
Time = datetime.now()
time = Time.strftime("Time : %H:%M\n")
date = Time.strftime("\nDate : %y-%m-%d\n")
name = Time.strftime(f"%y%m%d_%H%M_{rand}.txt")
T= date + time
session_count=1
#Condition
def D():
    G.append(T)
    while True:
        C=0#Question Count
        for i in range(3):
            L=[0,1,2,3,4,5]
            random.shuffle(L)
            Q=L[0]+L[1]
            pq=str(L[0])+" + "+str(L[1])+" = "
            print(pq,end="")
            V=int(input())
            if Q==V:
                S="✓ "+str(pq)+str(V)
```

```

        C+=1

    else:

        S="X "+str(pq)+str(V)+" The correct answer is "+str(Q)

        G.append(S)

    G.append(f'\nTotal questions : 3\nCorrect questions : {C}\nMarks : {((C/3)*100)}%\nMode =
'Demo')

    play_again = input("Do you want to play again? (yes/no): ")

    if play_again=='yes':

        continue

    elif play_again=="no":

        break

    return

def E():

    G.append(T)

    C=0

    while True:

        L=[0,1,2,3,4,5,6,7,8,9,10]

        O=["+", "-"]

        for i in range(5):

            random.shuffle(L)

            random.shuffle(O)

            operator=O[0]

            if O[0]=="+":

                Q=L[0]+L[1]

                pq=str(L[0])+" + "+str(L[1])+" = "

                C+=1

            elif O[0]=="-":

                Q=L[0]-L[1]

                pq=str(L[0])+" - "+str(L[1])+" = "

            #Q

```

```

print(pq,end="")
V=int(input())
if Q==V:
    S="✓ "+str(pq)+str(V)
else:
    S="X "+str(pq)+str(V)+" The correct answer is "+str(Q)
G.append(S)
G.append(f'\nTotal questions : 5\nCorrect questions : {C}\nMarks : {((C / 5) * 100)}%\nMode =
'Eassy')
play_again = input("Do you want to play again? (yes/no): ")
if play_again=='yes':
    continue
elif play_again=="no":
    break
return
def M():
    G.append(T)
    C=0
    while True:
        L=[0,1,2,3,4,5,6,7,8,9,10]
        O=["+", "-"]
        for i in range(10):
            random.shuffle(L)
            random.shuffle(O)
            operator=O[0]
            if O[0]=="+":
                Q=L[0]+L[1]
                pq=str(L[0])+" + "+str(L[1])+" = "
                C+=1
            elif O[0]=="-":

```

```

Q=L[0]-L[1]

pq=str(L[0])+" - "+str(L[1])+" = "

C+=1

#Q

print(pq,end="")

V=int(input())

if Q==V:

    S="√ "+str(pq)+str(V)

else:

    S="X "+str(pq)+str(V)+" The correct answer is "+str(Q)

G.append(S)

G.append(f'\nTotal questions : 10\nCorrect questions : {C}\nMarks : {((C / 10) * 100)}%\nMode =
'Medium')

play_again = input("Do you want to play again? (yes/no): ")

if play_again=='yes':

    continue

elif play_again=="no":

    break

return

def H():

    G.append(T)

    C=0

    while True:

        L=[0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20]

        O=["+", "-", "*"]

        for i in range(10):

            random.shuffle(L)

            random.shuffle(O)

            operator=O[0]

```



```

if O[0]=="+":
    Q=L[0]+L[1]
    pq=str(L[0])+" + "+str(L[1])+" = "
    C+=1
elif O[0]=="-":
    Q=L[0]-L[1]
    pq=str(L[0])+" - "+str(L[1])+" = "
    C+=1
elif O[0]=="*":
    Q=L[0]*L[1]
    pq=str(L[0])+" x "+str(L[1])+" = "
    C+=1
    #Q
print(pq,end="")
V=int(input())
if Q==V:
    S="✓ "+str(pq)+str(V)
else:
    S="X "+str(pq)+str(V)+" The correct answer is "+str(Q)
G.append(S)
G.append(f"\nTotal questions : 10\nCorrect questions : {C}\nMarks : {((C / 10) * 100)}%\nMode =
'Hard')
play_again = input("Do you want to play again? (yes/no): ")
if play_again=='yes':
    continue
elif play_again=="no":
    break
return
#CMD
if len(sys.argv)==1:

```

```

    X='D'
else:
    X=sys.argv[1].lower()

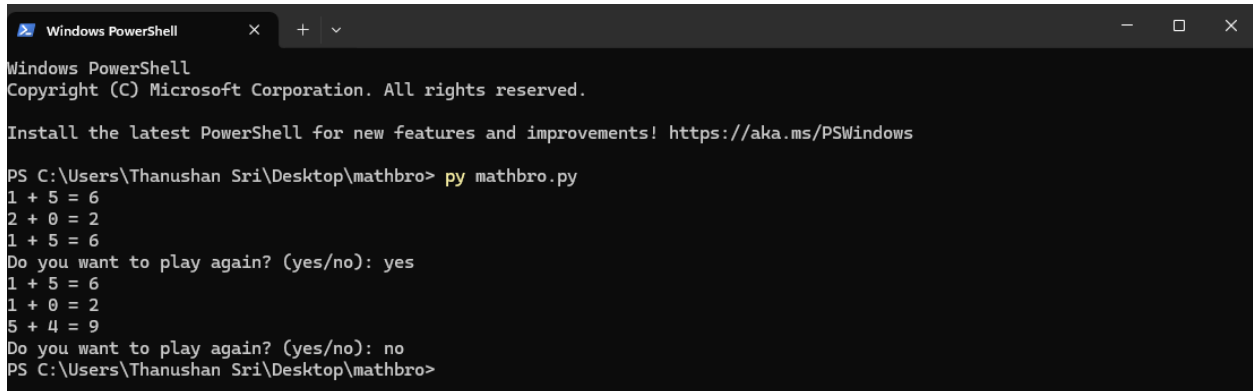
if X=='D':
    D()
elif X=='-e':
    E()
elif X=='-m':
    M()
elif X=='-h':
    H()
file=open(name, 'w', encoding='utf-8')
for i in G:
    file.write(str(i) + '\n')

```

2. Scenario about code

The code is designed to create an interactive math practice application with varying difficulty levels. It provides a dynamic learning experience by presenting math problems to users, tracking their performance, and saving the session results to a file.

3. Screen Shots Of The Running Program

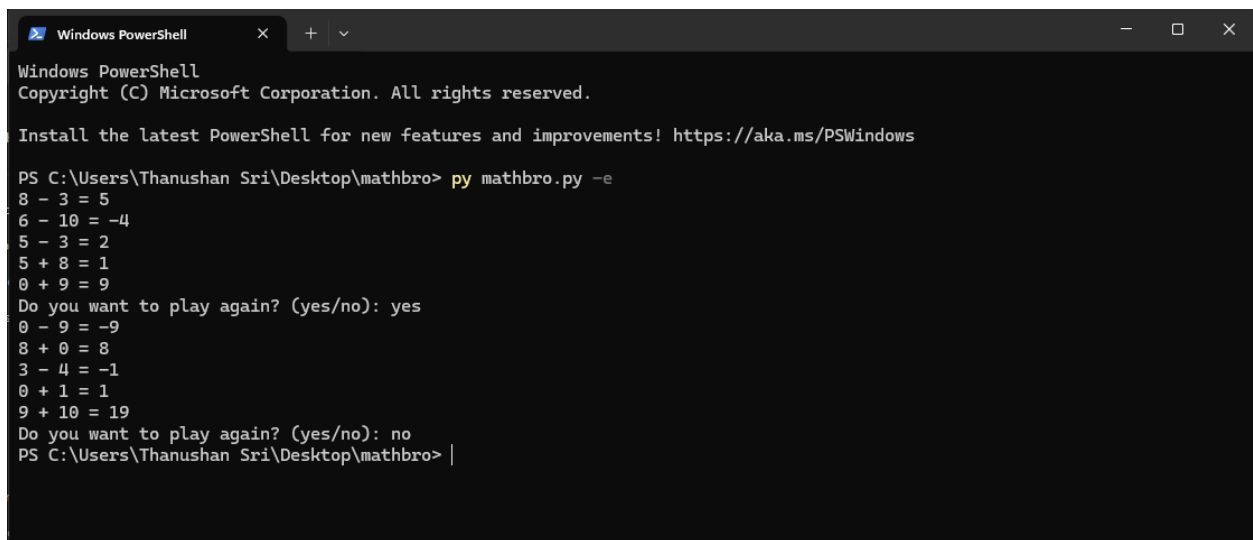


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Thanushan Sri\Desktop\mathbro> py mathbro.py
1 + 5 = 6
2 + 0 = 2
1 + 5 = 6
Do you want to play again? (yes/no): yes
1 + 5 = 6
1 + 0 = 2
5 + 4 = 9
Do you want to play again? (yes/no): no
PS C:\Users\Thanushan Sri\Desktop\mathbro>
```

Figure 1 Demo mode



```
Windows PowerShell
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PS C:\Users\Thanushan Sri\Desktop\mathbro> py mathbro.py -e
8 - 3 = 5
6 - 10 = -4
5 - 3 = 2
5 + 8 = 1
0 + 9 = 9
Do you want to play again? (yes/no): yes
0 - 9 = -9
8 + 0 = 8
3 - 4 = -1
0 + 1 = 1
9 + 10 = 19
Do you want to play again? (yes/no): no
PS C:\Users\Thanushan Sri\Desktop\mathbro> |
```

Figure 2 Easy Mode

```
Windows PowerShell
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PS C:\Users\Thanushan Sri\Desktop\mathbro> py mathbro.py -m
7 + 8 = 15
0 - 5 = -5
6 - 1 = 5
5 + 10 = 15
8 - 4 = 4
10 - 6 = 4
6 - 4 = 2
1 + 7 = 8
10 + 8 = 15
0 - 10 = -10
Do you want to play again? (yes/no): yes
2 - 0 = 2
7 + 9 = 16
1 - 10 = -9
0 - 9 = -9
1 - 8 = -7
10 - 2 = 8
3 - 1 = 2
5 + 9 = 14
2 - 1 = 1
6 + 3 = 9
Do you want to play again? (yes/no): no
PS C:\Users\Thanushan Sri\Desktop\mathbro> |
```

Figure 3 Medium Mode

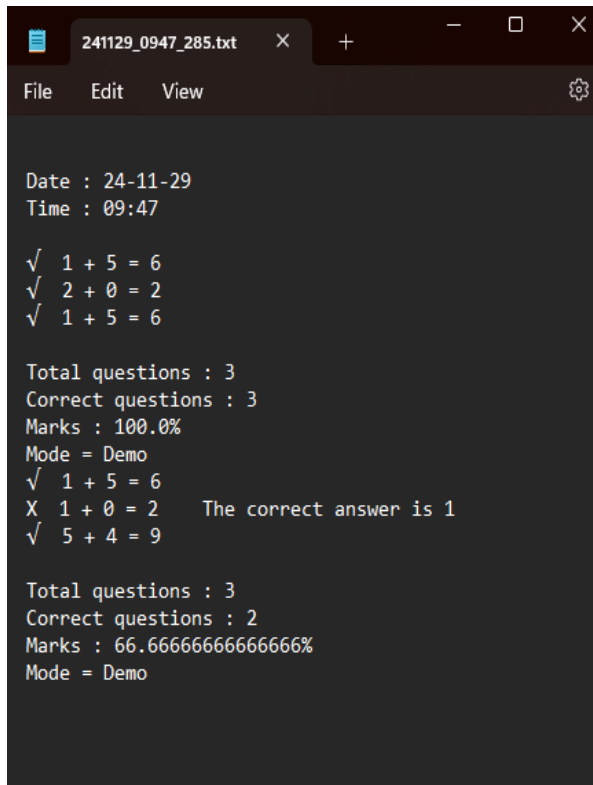
```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Thanushan Sri\Desktop\mathbro> py mathbro.py -h
1 + 9 = 10
9 - 7 = 2
10 x 12 = 120
6 - 15 = 9
7 + 15 = 22
0 x 13 = 0
18 + 16 = 1
11 - 8 = 3
14 - 5 = 9
15 + 9 = 24
Do you want to play again? (yes/no): yes
16 + 13 = 29
10 x 8 = 80
7 + 13 = 20
15 - 4 = 11
5 + 20 = 25
0 + 3 = 3
5 + 10 = 15
5 - 8 = -3
7 + 5 = 12
16 - 7 = 9
Do you want to play again? (yes/no): no
PS C:\Users\Thanushan Sri\Desktop\mathbro> |
```

Figure 4 Hard Mode

4. Screenshots Of The Text File



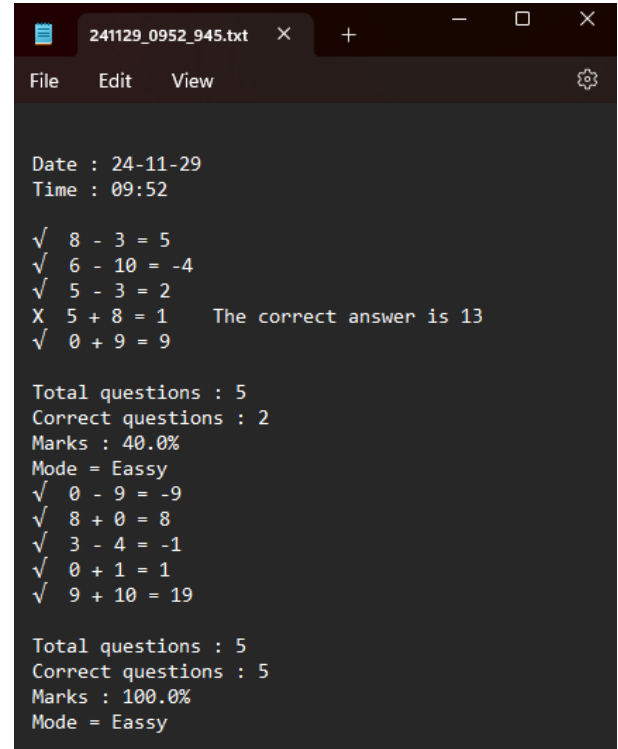
```
241129_0947_285.txt
File Edit View
Date : 24-11-29
Time : 09:47

✓ 1 + 5 = 6
✓ 2 + 0 = 2
✓ 1 + 5 = 6

Total questions : 3
Correct questions : 3
Marks : 100.0%
Mode = Demo
✓ 1 + 5 = 6
X 1 + 0 = 2 The correct answer is 1
✓ 5 + 4 = 9

Total questions : 3
Correct questions : 2
Marks : 66.66666666666666%
Mode = Demo
```

Figure 5 Demo Result sheet



```
241129_0952_945.txt
File Edit View
Date : 24-11-29
Time : 09:52

✓ 8 - 3 = 5
✓ 6 - 10 = -4
✓ 5 - 3 = 2
X 5 + 8 = 1 The correct answer is 13
✓ 0 + 9 = 9

Total questions : 5
Correct questions : 2
Marks : 40.0%
Mode = Eassy
✓ 0 - 9 = -9
✓ 8 + 0 = 8
✓ 3 - 4 = -1
✓ 0 + 1 = 1
✓ 9 + 10 = 19

Total questions : 5
Correct questions : 5
Marks : 100.0%
Mode = Eassy
```

Figure 6 Eassy Result sheet

```
241129_0952_945.txt
File Edit View
|
Date : 24-11-29
Time : 09:52
√ 8 - 3 = 5
√ 6 - 10 = -4
√ 5 - 3 = 2
X 5 + 8 = 1 The correct answer is 13
√ 0 + 9 = 9

Total questions : 5
Correct questions : 2
Marks : 40.0%
Mode = Easy
√ 0 - 9 = -9
√ 8 + 0 = 8
√ 3 - 4 = -1
√ 0 + 1 = 1
√ 9 + 10 = 19

Total questions : 5
Correct questions : 5
Marks : 100.0%
Mode = Easy
```

Figure 8 Medium Result sheet

```
241129_0958_389.txt
File Edit View
Date : 24-11-29
Time : 09:58
√ 1 + 9 = 10
√ 9 - 7 = 2
√ 10 x 12 = 120
X 6 - 15 = 9 The correct answer is -9
√ 7 + 15 = 22
√ 0 x 13 = 0
X 18 + 16 = 1 The correct answer is 34
√ 11 - 8 = 3
√ 14 - 5 = 9
√ 15 + 9 = 24

Total questions : 10
Correct questions : 10
Marks : 100.0%
Mode = Hard
√ 16 + 13 = 29
√ 10 x 8 = 80
√ 7 + 13 = 20
√ 15 - 4 = 11
√ 5 + 20 = 25
√ 0 + 3 = 3
√ 5 + 10 = 15
√ 5 - 8 = -3
√ 7 + 5 = 12
√ 16 - 7 = 9

Total questions : 10
Correct questions : 20
Marks : 200.0%
Mode = Hard
```

Figure 7 Hard Result sheet

5. Test Cases

No	Test Case	Expected Result	Actual Result	Pass/Fail
1	Start the game	Demo display	✓	Pass
2	Start the "Demo Mode"	"3" Addition Questions randomly show	✓	Pass
3	Ask question to get next session	"Do you want to play again?(Yes\No)"	✓	Pass
4	If "Yes"	Another "3" questions will show	✓	Pass
5	If "No"	Result sheet will be create.	✓	Pass
6	Start the "Eassy Mode"	"5" Addition ,Subtraction Questions randomly show	✓	Pass
7	Ask question to get next session	"Do you want to play again?(Yes\No)"	✓	Pass
8	If "Yes"	Another "5" questions will show	✓	Pass
9	If "No"	Result sheet will be create.	✓	Pass
10	Start the "Medium Mode"	"10" Addition, Subtraction Questions randomly show	✓	Pass
11	Ask question to get next session	"Do you want to play again?(Yes\No)"	✓	Pass
12	If "Yes"	Another "10" questions will show	✓	Pass
13	If "No"	Result sheet will be create.	✓	Pass
14	Start the "Hard Mode"	"10" Addition ,Subtraction, Multiplication Questions randomly show	✓	Pass
15	Ask question to get next session	"Do you want to play again?(Yes\No)"	✓	Pass
16	If "Yes"	Another "10" questions will show	✓	Pass
17	If "No"	Result sheet will be create.	✓	Pass

18	Run in CMD	Show the questions in CMD	✓	Pass
19	Marks, Mode, question count Print	Display all these things	✓	Pass
20	Result sheet creation	Result sheet text file generate successfully	✓	Pass