

Trace table

Trace table is used to:

- **Find the output of programs**
- **Find the changes in the values of variables**
- **Find errors in the program.**

1. Complete the trace table.

```
for x in range (1,6):  
    print(x*2)
```

x	Output

2. Complete the trace table.

```
for x in range (1,5):  
    if x < 3:  
        print("less than 3")  
    else:  
        print("3 or above")
```

x	x < 3	Output

3. Assume the user enters the following values: "Sam", "upper", "Ayo", "lower", "Zoe", "upper"

```
for x in range(1,4):  
    choice = input("Enter a word")  
    case = input("upper or lower")  
    if case == "upper":  
        print(choice.upper() )  
    else:  
        print(choice.lower() )
```

x	choice	case	Output

4. Complete the trace table.

<https://youtu.be/lcX4DMxqAKY>

```
for x in range (1,6):  
    print(x**2)
```

X	Output

5. Complete the trace table.

<https://youtu.be/9-cXSiAoSw>

```
for x in range (1,5):  
    country = "France"  
    print(country[x])
```

X	country	Output

6. Assume the user enters the following values: 0, 3, 2, 5

```
for x in range (2,7):  
    if x < 3:  
        print("it's Jeff")  
    else:  
        num = int(input("Enter a number"))  
        print(x * num)
```

<https://youtu.be/TNku5Z96Xrc>

x	Is x < 3	num	Output

7. Assume the user enters the following values: “Nick”, “Lukas”, “Lara”, “Tim”

```
for x in range (1,5):  
    name= input("Enter a name")  
    length = len(name)  
    print(x * length)
```

<https://youtu.be/kT69M2pO9IY>

X	name	length	Output

8. Assume the user enters the following values: 7, 0, 4, 8

```
for x in range (1,5):  
    country = "United States"  
    num = int(input("Enter a number"))  
    letter = country[num]  
    print(country[x] + letter)
```

<https://youtu.be/IleEze5i0YE>

X	country	num	letter	Output

9. Assume the user enters the following values: 4, *, 3, %, 6, %, 5, *

Hint: % = MOD (finding the remainder)

```
for x in range (1,5):  
    num = int(input("Enter a number"))  
    operator = input("Enter operator")  
    if operator == "%":  
        print(num % x)  
    else:  
        print(num*x)
```

https://youtu.be/VyrDzifn_s4

x	num	operator	Output

10. Complete the trace table

```
for x in range (1,4):  
    for y in range (1,4):  
        print( x * y )
```

<https://youtu.be/IEzhzWsoBds>

x	y	Output

11. Complete the trace table.

```
for x in range (1,7):  
    if x % 2 == 0:  
        print(x)
```

<https://youtu.be/GPPdK7qyWCA>

X	Is $x \% 2 == 0$	Output

12. Complete the trace table.

```
x = 1
```

```
While x < 5:
```

```
    print(x*2)
```

```
    x = x + 1
```

```
print(" The end ")
```

x	x < 5	Output

13. Assume the user enters the following inputs:
12,10,20,9

```
num = int(input("Enter number"))  
while num >= 10:  
    print("Incorrect")  
    num = int(input("Enter number"))  
print("Correct")
```

num	num>=10	Output

14. Assume the user enters the following values:

“yes”, “no”, “chicken”

x = 0

dancer = 0

while x < 3:

 choice = input("Do you dance?")

 if choice == "yes":

 print("Great")

 dancer = dancer + 1

 else:

 print("Why not?")

 x = x + 1

x	dancer	x < 3	choice	output

15. Complete the trace table. Assume the user enters the following values:
"Tom", "Sarah", "Andy", "Ed"

```
singer = input("Who sings the song Perfect?")
while singer != "Ed":
    print("Incorrect")
    singer = input("Who sings the song Perfect?")
print("Correct")
```

singer	singer != "Ed"	Output

16. Complete the trace table.

```
x = 0  
y = 0  
while x < 5:  
    if x < 3:  
        print(x * y)  
        y = y + 2  
    else:  
        print(x * y)  
        y = y + 3  
    if x == 4:  
        x = 1000  
x = x + 1
```

x	y	x < 5	x < 3	Output

17. Complete the trace table. Then write the final value of letter:

Final value of letter:

```
x = 0
name = "Charles"
while x < 4:
    print(name[x])
    if x > 2:
        letter = name[x] + name[x+1]
    else:
        letter = name[x] + name[x+2]
    x = x + 1
```

x	name	x < 4	Output	letter

18. Complete the trace table. Assume the user enters the following numbers: **10, 50, 300, 5, 1000**

```
highest = 0
lowest = 999
number = int(input("Enter a number"))
while number < 999:
    if number > highest:
        highest = number
    if number < lowest:
        lowest = number
    number = int(input("Enter a number"))
print(highest-lowest)
```

Highest	lowest	number	Output

19. Complete the trace table. You may not need all the spaces in the trace table.

Enter the final value of z:

z = 0

x = 2

y = 12

z = 0

total = x - y

while total > y:

x = x + 5

z = z + 1

print(z)

x	y	z	total	Output

20. Complete the trace table.

x = 1

y = 25

z = 0

while x < y:

x = x + 8

z = z + 1

print(x+z)

x	y	z	Output

21. Complete the trace table.

```
num = 1
while num < 5:
    if num % 2 == 0:
        print("Even")
    else:
        print("Odd")
    num = num + 1
```

num	num < 5	Output

22. Lets see how it works in a trace table:

```
films = ["Saw", "Sharks", "Lion king"]  
for x in range(0, len(films)):  
    print(films[x])
```

x	Output

23. Complete the trace table.

```
names = ["Tom", "Mark", "Sam"]  
for x in range(0, len(films)):  
    print(names[x])
```

x	Output

24. Complete the trace table.

```
array = ["x","y","x"]  
for x in range(0,len(array)):  
    letter = array[x]  
    if letter == "x":  
        letter = "z"  
    print(letter+"y")
```

x	letter	Output

25. Complete the trace table

```
numbers = [3,4,7,1,4]
```

```
new = 0
```

```
for x in range(0, len(array)):
```

```
    num = numbers[x]
```

```
    if num > 3:
```

```
        new = new + num
```

```
    else:
```

```
        new = new - num
```

new	x	num

26. Complete the trace table – Assume the user enters the following as inputs: **Metallica, Idles**

```
array = ["N/A", "Pink", "Queen", "N/A", "Beatles"]
for x in range(0, len(array)):
    band = array[x]
    if band == "N/A":
        name = input("Enter band name")
        print(name)
    else:
        print(band)
```

band	name	Output

27. Complete the trace table

array = [4,2,7,5,8]

highest = 0

lowest = 9999

num=0

while num < 5:

item = array[num]

if item > highest:

highest = item

if item < lowest:

lowest = item

num = num+1

highest	lowest	num	item

28. Complete the trace table – Assume the user enters 5,2,8,1,4 as inputs

```
array = [4,8,5,2,6]
```

```
total = 0
```

```
num = 0
```

```
while num < 5:
```

```
    number = int(input("Enter a number"))
```

```
    item = array[num]
```

```
    if number > item:
```

```
        total = total + item + number
```

```
    else:
```

```
        total = total + item
```

```
    num = num + 1
```

total	num	number	item

29. Complete the trace table

```
letter = [ ["A", "B", "C"], ["G", "S", "T"] ]  
for row in range(0,2):  
    for column in range(0,3):  
        print(letter[row][column])
```

row	column	output

30) Complete the trace table.

```
grades = [{"Tom", "x"}, {"Kim", "C"}, {"Sam", "x"}]
for row in range(0,3):
    if grades[row][1] == "x":
        print("fail")
    else:
        print("pass")
```

row	grades[row][0]	grades[row][1]	Output

31) Complete the trace table. Assume the user enters the following inputs:

15,40,20,7,55,21

```
numbers = [[[], []], [ [], [] ], [ [], [] ]]  
for x in range(0,3):  
    for y in range(0,2):  
        num= int(input("Enter a number"))  
        numbers[x][y]= num+5
```

x	y	num	numbers[x][y]

32) Complete the trace table. Assume the user enters the following inputs: **25,90,50**

```
grades = [{"Nina", ""}, {"Ayo", ""}, {"Kas", ""}]
for row in range(0,3):
    print(grades[row][0])
    score = int(input("Enter score for "+ grades[row][0] ))
    if score >= 50:
        grades[row][1] = "pass"
    else:
        grades[row][1] = "fail"
```

row	Output	score	grades[row][1]

33. Starter: Revisit phase – Complete the trace table Assume the user enters the following values: **5,106,200,100**

```
start = True
```

```
while start == True:
```

```
    num = int(input("Enter a number"))
```

```
    if num > 100:
```

```
        print("High")
```

```
        start = True
```

```
    elif num < 100:
```

```
        print("Low")
```

```
        start = True
```

```
    else:
```

```
        print("Good")
```

```
        start = False
```

start	num	output

34. Procedure trace table - Assume the user enters the following values: 5,18,15,100,17

```
def numbers (num):  
    if num > 10 and num < 20:  
        print("Almost")  
    elif num >=20:  
        print("Good")  
    else:  
        print("Bad")  
  
for x in range (5):  
    choice = int(input("Enter a number"))  
    num = choice+2  
    numbers(num)
```

choice	num	output

35. Procedure trace table - Assume the user enters the following values: 88,155,15,102,100

```
def game(num):  
    if num > 100:  
        print("High")  
    elif num < 100:  
        print("Low")  
    else:  
        print("Bingo")  
  
repeat = True  
while repeat == True:  
    num = int(input("Enter a number"))  
    game(num)  
    if num == 100:  
        repeat = False
```

Repeat	Repeat == True	num	output	num==100

36. Procedure trace table - Assume the user enters the following values: fortnite, minecraft, overwatch

```
def fortnite(x):  
    age = 12+x  
    print("Good game")  
def overwatch(x):  
    age = 15+x  
    print("Excellent")  
def minecraft(x):  
    age = 9+x  
    print("Decent")  
for x in range(1,4):  
    game = input("Enter a game")  
    if game == "overwatch":  
        overwatch(x)  
    elif game == "fortnite":  
        fortnite(x)  
    else:  
        minecraft(x)
```

x	game	age	output