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| [LAB TASK NO -03 AND 04] |
| **[KABEER AHMED (SE-28)]** |

DATE:

**Program 1:** Practicing with simple if condition. Execute the following program with a = 400 and b =500. Then change the value of a =500 and b = 400.

**INPUT:**

a=400 OR 500  
b=500 OR 400  
**if** a==400:  
 print(**"The value of a is equal to 400"**)  
**if** a<b:  
 print(**"The value of a is less than b"**)  
**if** a>b:  
 print(**"The value of a is greater than b"**)  
**if** a!=b:  
 print(**"The value of a is not equal to b"**)  
**if** a<=b:  
 print(**"The value of a is less than or equal to b"**)  
**if** a>=b:  
 print(**"The value of a is greater than or equal to b"**)

**OUTPUT.1:**

The value of a is equal to 400

The value of a is less than b

The value of a is not equal to b

The value of a is less than or equal to b

**OUTPUT.2:**

The value of a is greater than b

The value of a is not equal to b

The value of a is greater than or equal to b

**CONCLUSION:**

The value of a is not equal to b

**Program 2**: Practicing with simple if condition if both conditions are true using AND operator.

**INPUT:**

a=10  
b=5  
c=20  
**if** a>b **and** c>a:  
 print(**"Both conditions are True"**)

**OUTPUT:**

Both conditions are True

**Program 3:** Practicing with simple if condition if any of the condition is true using OR operator.

**INPUT:**

a=105  
b=50  
c=200  
**if** a>b **or** a>c:  
 print(**"Atleast one of the condition is True"**)

**OUTPUT:**

At least one of the condition is True

**Program 4:** Write a program which takes the lower limit and upper limit then find which of the number are prime number.

**INPUT:**

limit1=int(input(**"Enter Lower Limit Range "**))  
limit2=int(input(**"Enter upper Limit Range "**))  
print(**"Prime numbers between"**,limit1,**"and"**,limit2,**"are"**)  
**for** i **in** range(limit1,limit2+1):  
 **if** i>1:  
 **for** j **in** range(2,i):  
 **if**(i%j)==0:  
 **break  
 else**:  
 print(i)

**OUTPUT:**

Enter Lower Limit Range **2**

Enter upper Limit Range **20**

Prime numbers between 2 and 20 are

2

3

5

7

11

13

17

19

**Program 5:** Write a program which takes the initial and final values from the user then print the sum of all the number.

**INPUT:**

rang1=int(input(**"Enter The Initial value"**))  
rang2=int(input(**"Enter The Final value"**))  
sum=0  
**for** i **in** range(rang1,rang2+1):  
 sum=sum+i  
print(**"The sum is"**,sum)

**OUTPUT:**

Enter The Initial value**1**

Enter The Final value**8**

The sum is 36

**Program 6:** Write a program which takes the number of rows and columns from the user and generate the values in form of list.

**INPUT:**

row=int(input(**"Enter The no. of rows"**))  
column=int(input(**"Enter The no. of columns"**))  
list1=[[0 **for** j **in** range(column)]**for** i **in** range(row)]  
**for** i **in** range(row):  
 **for** j **in** range(column):  
 list1[i][j]=i\*j  
print(list1)

**OUTPUT:**

Enter The no. of rows**3**

Enter The no. of columns**3**

[[0, 0, 0], [0, 1, 2], [0, 2, 4]]

**Program 7:** Write a program which will check the data type of given data in a loop.

**INPUT:**

datalist=[300, 12.65, 5+6j, **True**, **'Faisal'**, (5, -7), [8, 52],{**"color"**:**'blue'**, **"color"**:**'red'**}]  
**for** i **in** datalist:  
 print(**"Type of"**,i,**"is"**,type(i))

**OUTPUT:**

Type of 300 is <class 'int'>

Type of 12.65 is <class 'float'>

Type of (5+6j) is <class 'complex'>

Type of True is <class 'bool'>

Type of Faisal is <class 'str'>

Type of (5, -7) is <class 'tuple'>

Type of [8, 52] is <class 'list'>

Type of {'color': 'red'} is <class 'dict'>

**Program 8:** Write a program to generate the ASCII Chart from 0 to 256.

**INPUT:**

print(**"\t\t\t ASCII Character"**)  
**for** i **in** range(0,256):  
 print(i,**"="**,chr(i),end=**"\t"**)  
print(**"\n"**)

**OUTPUT:** ASCII Character

0 = 1 = 2 = 3 = 4 = 5 = 6 = 7 = 8 = 9 = 10 =

14 = 15 = 16 = 17 = 18 = 19 = 20 = 21 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = ‑ 31 = ­ 32 = 33 = ! 34 = " 35 = # 36 = $ 37 = % 38 = & 39 = ' 40 = ( 41 = ) 42 = \* 43 = + 44 = , 45 = - 46 = . 47 = / 48 = 0 49 = 1 50 = 2 51 = 3 52 = 4 53 = 5 54 = 6 55 = 7 56 = 8 57 = 9 58 = : 59 = ; 60 = < 61 = = 62 = > 63 = ? 64 = @ 65 = A 66 = B 67 = C 68 = D 69 = E 70 = F 71 = G 72 = H 73 = I 74 = J 75 = K 76 = L 77 = M 78 = N 79 = O 80 = P 81 = Q 82 = R 83 = S 84 = T 85 = U 86 = V 87 = W 88 = X 89 = Y 90 = Z91 = [ 92 = \ 93 = ] 94 = ^ 95 = \_ 96 = ` 97 = a 98 = b 99 = c 100 = d 101 = e 102 = f 103 = g 104 = h 105 = i 106 = j 107 = k 108 = l 109 = m 110 = n 111 = o 112 = p 113 = q 114 = r 115 = s 116 = t 117 = u 118 = v 119 = w 120 = x 121 = y 122 = z 123 = { 124 = | 125 = } 126 = ~ 127 =  128 =  129 =  130 =  131 =  132 =  133 =  134 =  135 =  136 =  137 =  138 =  139 =  140 =  141 =  142 =  143 =  144 =  145 =  146 =  147 =  148 =  149 =  150 =  151 =  152 =  153 =  154 =  155 =  156 =  157 =  158 =  159 =  160 =   161 = ¡ 162 = ¢ 163 = £ 164 = ¤ 165 = ¥ 166 = ¦ 167 = § 168 = ¨ 169 = © 170 = ª 171 = « 172 = ¬ 173 = ­ 174 = ® 175 = ¯ 176 = ° 177 = ± 178 = ² 179 = ³ 180 = ´ 181 = µ 182 = ¶ 183 = · 184 = ¸ 185 = ¹ 186 = º 187 = » 188 = ¼ 189 = ½ 190 = ¾ 191 = ¿ 192 = À 193 = Á 194 = Â 195 = Ã 196 = Ä 197 = Å 198 = Æ 199 = Ç 200 = È 201 = É 202 = Ê 203 = Ë 204 = Ì 205 = Í 206 = Î 207 = Ï 208 = Ð 209 = Ñ 210 = Ò 211 = Ó 212 = Ô 213 = Õ 214 = Ö 215 = × 216 = Ø 217 = Ù 218 = Ú 219 = Û 220 = Ü 221 = Ý 222 = Þ 223 = ß 224 = à 225 = á 226 = â 227 = ã 228 = ä 229 = å 230 = æ 231 = ç 232 = è 233 = é 234 = ê 235 = ë 236 = ì 237 = í 238 = î 239 = ï 240 = ð 241 = ñ 242 = ò 243 = ó 244 = ô 245 = õ 246 = ö 247 = ÷ 248 = ø 249 = ù 250 = ú 251 = û 252 = ü 253 = ý 254 = þ 255 = ÿ

**Program 11:** Write a program which calculates the vowels from the given string.

**INPUT:**

string=input(**"Enter your string "**)  
vol=0  
**for** i **in** string:  
 **if**(i==**'a'or** i==**'e' or** i==**'i' or** i==**'o' or** i==**'u' or** i==**'A' or** i==**'E' or** i==**'I' or** i==**'O' or** i==**'U'**):  
 vol=vol+1  
print(**"Number of Vowels are"**,vol)

**OUTPUT:**

Enter your string **my name is kabeer**

Number of Vowels are 6

**Program 9:** Write a program to convert digital number from 0 to 16 into binary, octal and hexa-decimal number system.

**INPUT:**

print(**"Python program to convert decimal number into binary, octal and hexadecimal number system"**)  
**for** i **in** range(0,17):  
 print(**"The decimal value of"**, i, **"is:"**, **"in binary its :"**, bin(i), **"in octal its:"**, oct(i),**"and in Hexa- Decimal its:"**, hex(i))  
print(**"That’s the end of the Program with range from 1 to 16"**)

**OUTPUT:**

Python program to convert decimal number into binary, octal and hexadecimal number system

The decimal value of 0 is: in binary its : 0b0 in octal its: 0o0 and in Hexa- Decimal its: 0x0

The decimal value of 1 is: in binary its : 0b1 in octal its: 0o1 and in Hexa- Decimal its: 0x1

The decimal value of 2 is: in binary its : 0b10 in octal its: 0o2 and in Hexa- Decimal its: 0x2

The decimal value of 3 is: in binary its : 0b11 in octal its: 0o3 and in Hexa- Decimal its: 0x3

The decimal value of 4 is: in binary its : 0b100 in octal its: 0o4 and in Hexa- Decimal its: 0x4

The decimal value of 5 is: in binary its : 0b101 in octal its: 0o5 and in Hexa- Decimal its: 0x5

The decimal value of 6 is: in binary its : 0b110 in octal its: 0o6 and in Hexa- Decimal its: 0x6

The decimal value of 7 is: in binary its : 0b111 in octal its: 0o7 and in Hexa- Decimal its: 0x7

The decimal value of 8 is: in binary its : 0b1000 in octal its: 0o10 and in Hexa- Decimal its: 0x8

The decimal value of 9 is: in binary its : 0b1001 in octal its: 0o11 and in Hexa- Decimal its: 0x9

The decimal value of 10 is: in binary its : 0b1010 in octal its: 0o12 and in Hexa- Decimal its: 0xa

The decimal value of 11 is: in binary its : 0b1011 in octal its: 0o13 and in Hexa- Decimal its: 0xb

The decimal value of 12 is: in binary its : 0b1100 in octal its: 0o14 and in Hexa- Decimal its: 0xc

The decimal value of 13 is: in binary its : 0b1101 in octal its: 0o15 and in Hexa- Decimal its: 0xd

The decimal value of 14 is: in binary its : 0b1110 in octal its: 0o16 and in Hexa- Decimal its: 0xe

The decimal value of 15 is: in binary its : 0b1111 in octal its: 0o17 and in Hexa- Decimal its: 0xf

The decimal value of 16 is: in binary its : 0b10000 in octal its: 0o20 and in Hexa- Decimal its: 0x10

That’s the end of the Program with range from 1 to 16

**Program 10:** Write a Python program to construct the following pattern, using a nested for loop.

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\* \* \* \*

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

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**INPUT:**

n=5  
**for** i **in** range(n):  
 **for** j **in** range(i):  
 print(**"\*"**,end=**""**)  
 print(**""**)  
**for** i **in** range(n,0,-1):  
 **for** j **in** range(i):  
 print(**"\*"**,end=**""**)  
 print(**""**)

**OUTPUT:**

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**PROGRAMMING EXERCISE**

**1. Write a program which solves the quadratic equation. The user will enter the value of a, b and c. The program will then check the denominator that if denominator is zero or not. If its zero it can reply the equation cannot solve as there is a zero division else, it will execute the program and will generate two solutions.**

**INPUT:**

**import** cmath  
**def** calc(a,b,c):  
 d=(b\*\*2)-4\*a\*c  
 x=(-b-cmath.sqrt(d))/2\*a  
 y=(-b+cmath.sqrt(d))/2\*a  
 print(**"the solutions Are {0},{1}"**.format(x,y))  
a1=float(input(**"Enter Value Of a"**))  
b1=float(input(**"Enter Value Of b"**))  
c1=float(input(**"Enter Value Of c"**))  
**if**(a1==0):  
 print(**"the equation cannot solve as there is a zero division "**)  
**else**:  
 calc(a1,b1,c1)

**OUTPUT:**

Enter Value Of a**3**

Enter Value Of b**2**

Enter Value Of c**0**

the solutions Are (-6+0j),0j

**2.Calculate the arithmetic sequence of n numbers. The program will generate the nth term of the sequence, whereas the user will enter the first term and the common difference. The program will then ask either to continue or not, if the user will enter yes it will ask the next nth term to calculate.**

**INPUT:**

**from** math **import**\*  
**def** AP(a1,d,n):  
 an=a1+(n-1)\*d  
 **return** an  
a2=int(input(**"Enter The First Term"**))  
d1=int(input(**"Enter The Common Difference"**))  
n1=int(input(**"Enter The Nth Term"**))  
AP1=AP(a2,d1,n1)  
print(**"The Nth Term is "**,AP1)  
continous=str(input(**"You Want To Continue or not"**))  
**if**(continous==str(**"yes"**)):  
 n2=int(input(**"Enter The Nth Term"**))  
 AP2=AP(a2,d1,n2)  
 print(**"The Nth Term is "**, AP2)  
**else**:  
 print()

**OUTPUT:**

Enter The First Term**2**

Enter The Common Difference**2**

Enter The Nth Term**6**

The Nth Term is 12

You Want To Continue or not **yes**

Enter The Nth Term**9**

The Nth Term is 18

**3.Write a function which will check either the giving string is Palindrome or not. Palindrome is a string when we reverse the string it will generate the original string.**

**INPUT:**

**def** palin(word):  
 **if**(list(word)==list(reversed(word))):  
 print(**"It Is Palindrome."**)  
 **else**:  
 print(**"It Is Not Palindrome."**)  
word1=str(input(**"Enter The Word :"**))  
word2=word1.casefold()  
palin(word2)

**OUTPUT:**

Enter The Word :**MOM**

It Is Palindrome.

**5.Generate a table from initial value to final, depending upon the user starting and ending range in matrix form such as:**

**INPUT:**

start=int(input(**"Enter the starting range "**))  
end=int(input(**"Enter the ending range "**))  
**for** i **in** range(start,end+1):  
 **for** j **in** range(start,end+1):  
 print(j\*i,**"\t"**,end=**""**)  
 print()

**OUTPUT:**

Enter the starting range **1**

Enter the ending range **5**

1 2 3 4 5

2 4 6 8 10

3 6 9 12 15

4 8 12 16 20

5 10 15 20 25

**6.Write a program which will add two square matrices.**

**INPUT:**

a=[[0,1,2],[3,6,8],[2,5,7]]  
b=[[1,1,1],[2,1,2],[4,3,1]]  
c=[[0,0,0],[0,0,0],[0,0,0]]  
**for** i **in** range(len(a)):  
 **for** j **in** range(len(a[0])):  
 c[i][j]=a[i][j]+b[i][j]  
 print(c[i][j],end=**"\t"**)  
 print(**""**)

**OUTPUT:**

1 2 3

5 7 10

6 8 8

**7.Write a program which will multiply two square matrices.**

**INPUT:**

a=[[2,1],[2,5]]  
b=[[1,1],[4,1]]  
c=[[0,0],[0,0]]  
**for** i **in** range(len(a)):  
 **for** j **in** range(len(b[0])):  
 **for** k **in** range(len(b)):  
 c[i][j]+=a[i][k]\*b[k][j]  
 print(c[i][j],end=**"\t"**)  
 print(**""**)

**OUTPUT:**

6 3

22 7

**4.Write a program which will collect your name, your father’s name, your roll number and your subjects (5 Subjects with name and numbers). At the end it will generate a result with your name, your father’s name, your details subjects, marks you have obtained with total marks with grade and percentage.**

**INPUT:**

name=input(**"Enter Your Name"**)  
fname=input(**"Enter Your Father`s Name"**)  
s1=input(**"Enter the First Subject"**)  
n1=int(input(**"Enter Their Numbers"**))  
s2=input(**"Enter the Second Subject"**)  
n2=int(input(**"Enter Their Numbers"**))  
s3=input(**"Enter the Third Subject"**)  
n3=int(input(**"Enter Their Numbers"**))  
s4=input(**"Enter the Fourth Subject"**)  
n4=int(input(**"Enter Their Numbers"**))  
s5=input(**"Enter the Fifth Subject"**)  
n5=int(input(**"Enter Their Numbers"**))  
tn=n1+n2+n3+n4+n5  
p=(tn/500)\*100  
print(**"Name :"**,name)  
print(**"Father Name :"**,fname)  
print(**"Subjects"**,**"\t"**,**"Obtained Marks"**,**"\t"**,**"Total Marks"**,**"\t"**,**"persentage"**)  
print(s1,**"\t\t"**,n1,**"\t\t\t\t"**,**"100"**,**"\t\t\t"**,n1,**"%"**)  
print(s2,**"\t\t"**,n2,**"\t\t\t\t"**,**"100"**,**"\t\t\t"**,n2,**"%"**)  
print(s3,**"\t\t\t"**,n3,**"\t\t\t\t"**,**"100"**,**"\t\t\t"**,n3,**"%"**)  
print(s4,**"\t\t"**,n4,**"\t\t\t\t"**,**"100"**,**"\t\t\t"**,n4,**"%"**)  
print(s5,**"\t\t"**,n5,**"\t\t\t\t"**,**"100"**,**"\t\t\t"**,n5,**"%"**)  
print(**"Obtained Marks "**,tn)  
print(**"Total Marks 500"**)  
print(**"persentage "**,p,**"%"**)  
**if**(80<=p **and** 100>=p):  
 print(**"Grade: A1"**)  
**elif**(70<=p **and** 80>=p):  
 print(**"Grade A"**)  
**elif**(60<=p **and** 70>=p):  
 print(**"Grade B"**)  
**elif**(50<=p **and** 60>=p):  
 print(**"Grade C"**)  
**elif**(40<=p **and** 50>=p):  
 print(**"Grade D"**)  
**elif**(33<=p **and** 40>=p):  
 print(**"Grade E"**)  
**else**:  
 print(**"You are Failed"**)

**OUTPUT:**

Enter Your Name**Kabeer Ahmed**

Enter Your Father`s Name**Manzoor Ahmed**

Enter the First Subject**Chemistry**

Enter Their Numbers**85**

Enter the Second Subject**Physics**

Enter Their Numbers**92**

Enter the Third Subject**maths**

Enter Their Numbers**99**

Enter the Fourth Subject**Biology**

Enter Their Numbers**63**

Enter the Fifth Subject**English**

Enter Their Numbers**70**

Name : Kabeer Ahmed

Father Name : Manzoor Ahmed

Subjects Obtained Marks Total Marks persentage

Chemistry 85 100 85 %

Physics 92 100 92 %

maths 99 100 99 %

Biology 63 100 63 %

English 70 100 70 %

Obtained Marks 409

Total Marks 500

persentage 81.8 %

Grade: A1