⌄ Gr X HYE Program list and solutions

1) Write a Python program to find the largest of two numbers. Take inputs from user.

```python
num1 = int(input("Enter the first number:"))
num2 = int(input("Enter the second number:"))

if num1>num2:
  print(num1,"is the largest.")
else:
  print(num2,"is the largest.")
```

```
⊋  Enter the first number:5
   Enter the second number:98
   98 is the largest.
```

2) Write a Python program that takes three numbers as input from user and finds their average.

```python
num1 = int(input("Enter the first number:"))
num2 = int(input("Enter the second number:"))
num3 = int(input("Enter the third number:"))

avg = (num1 + num2 + num3)/3

print("The average of",num1,",",num2,"and",num3,"is",avg)
```

```
⊋  Enter the first number:45
   Enter the second number:34
   Enter the third number:12
   The average of 45 , 34 and 12 is 30.333333333333332
```

3) Write a Python program to take a number from the user and check whether it is a prime number or not.

```python
# Get input from the user
num = int(input("Enter a number: "))

# Assume the number is prime
is_prime = True

# A prime number is greater than 1
if num <= 1:
    is_prime = False
else:
    # Check for factors from 2 to the square root of the number
    for i in range(2, int(num ** 0.5) + 1):
        if num % i == 0:
            is_prime = False
            break

# Print the result
if is_prime:
    print(f"{num} is a prime number.")
else:
    print(f"{num} is not a prime number.")
```

```
⊋  Enter a number: 5
   5 is a prime number.
```

4) Write a program to input two numbers and find their HCF.

```python
# Get input from the user
num1 = int(input("Enter the first number: "))
num2 = int(input("Enter the second number: "))

# Find the smaller of the two numbers
min_num = min(num1, num2)

# Initialize HCF to 1 (the minimum possible HCF)
hcf = 1

# Loop from 1 to the smaller number
for i in range(1, min_num + 1):
    # If both numbers are divisible by i, then i is a common factor
    if num1 % i == 0 and num2 % i == 0:
```

```
        hcf = i

# Print the HCF
print(f"The HCF of {num1} and {num2} is {hcf}.")
```

    Enter the first number: 3
    Enter the second number: 6
    The HCF of 3 and 6 is 3.

5) Write a program to input two numbers and find their LCM.

```
# Get input from the user
num1 = int(input("Enter the first number: "))
num2 = int(input("Enter the second number: "))

# Find the greater of the two numbers
greater = max(num1, num2)

# Start from the greater number and find the LCM
while True:
    if greater % num1 == 0 and greater % num2 == 0:
        lcm = greater
        break
    greater += 1

# Print the LCM
print(f"The LCM of {num1} and {num2} is {lcm}.")
```

    Enter the first number: 3
    Enter the second number: 6
    The LCM of 3 and 6 is 6.

6) Write a program to print the sum of first 10 natural numbers.

```
N=1
Sum=0
for i in range(N,11):
    Sum=Sum+i
print("The sum of first 10 natural numbers is",Sum)
```

    The sum of first 10 natural numbers is 55

7) Write a Python program to find numbers that are divisible by 7 and multiples of 5 between 1200 and 2200.

```
# Loop through the range from 1200 to 2200
for num in range(1200, 2201):
    # Check if the number is divisible by 7 and a multiple of 5
    if num % 7 == 0 and num % 5 == 0:
        print(num)
```

    1225
    1260
    1295
    1330
    1365
    1400
    1435
    1470
    1505
    1540
    1575
    1610
    1645
    1680
    1715
    1750
    1785
    1820
    1855
    1890
    1925
    1960
    1995
    2030
    2065
    2100
    2135
    2170

8) Write a Python program to calculate the area and perimeter of a rectangle.

```python
# Get the length and width of the rectangle from the user
length = float(input("Enter the length of the rectangle: "))
width = float(input("Enter the width of the rectangle: "))

# Calculate the area
area = length * width

# Calculate the perimeter
perimeter = 2 * (length + width)

# Print the area and perimeter
print("The area of the rectangle is",area)
print("The perimeter of the rectangle is",perimeter)
```

```
Enter the length of the rectangle: 45.5
Enter the width of the rectangle: 23.6
The area of the rectangle is 1073.8
The perimeter of the rectangle is 138.2
```

9) Write a Python program to calculate the average marks of three subjects.

```python
# Get the marks for the three subjects from the user
subject1 = float(input("Enter the marks for subject 1: "))
subject2 = float(input("Enter the marks for subject 2: "))
subject3 = float(input("Enter the marks for subject 3: "))

# Calculate the total marks
total_marks = subject1 + subject2 + subject3

# Calculate the average marks
average_marks = total_marks / 3

# Print the average marks
print("The average marks of the three subjects are",average_marks)
```

```
Enter the marks for subject 1: 35.5
Enter the marks for subject 2: 23
Enter the marks for subject 3: 56
The average marks of the three subjects are 38.166666666666664
```

10) Write a Python program to input the name, age, and basic salary of an employee. Calculate the total salary of an employee by adding 10%DA and 10%HRA to the basic salary.

```python
# Get the employee's details from the user
name = input("Enter the employee's name: ")
age = int(input("Enter the employee's age: "))
basic_salary = float(input("Enter the employee's basic salary: "))

# Calculate the Dearness Allowance (DA) as 10% of the basic salary
da = 0.10 * basic_salary

# Calculate the House Rent Allowance (HRA) as 10% of the basic salary
hra = 0.10 * basic_salary

# Calculate the total salary
total_salary = basic_salary + da + hra

# Print the employee's details and total salary
print("Employee Name:",name)
print("Employee Age:",age)
print("Basic Salary:",basic_salary)
print("Dearness Allowance (DA):",da)
print("House Rent Allowance (HRA):",hra)
print("Total Salary:",total_salary)
```

```
Enter the employee's name: Mr. Python
Enter the employee's age: 38
Enter the employee's basic salary: 25000
Employee Name: Mr. Python
Employee Age: 38
Basic Salary: 25000.0
Dearness Allowance (DA): 2500.0
House Rent Allowance (HRA): 2500.0
```

```
Total Salary: 30000.0
```

11) Create a Python program to determine whether a year is a leap year or not.

```python
# Get the year from the user
year = int(input("Enter a year: "))

# Check if the year is a leap year
if year % 4 == 0:
    print(f"{year} is a leap year.")
else:
    print(f"{year} is not a leap year.")
```

```
Enter a year: 2024
2024 is a leap year.
```

12) Write a Python program to display "Valid Voter" if the following condition is true:
Age of the person should be>=18

```python
# Get the age of the person from the user
age = int(input("Enter the age of the person: "))

# Check if the person is eligible to vote
if age >= 18:
    print("Valid Voter")
else:
    print("Not a Valid Voter")
```

```
Enter the age of the person: 23
Valid Voter
```

13) Write a Python program to input the monthly income of an employee between 60 and 80 years old and calculate the annual income tax on the basis of the following.

Tax Slab	Rates
3 lakhs	NIL
3 lakhs to 5 lakhs	5.00%
5 lakhs to 10 lakhs	20.00%
10 lakhs and more	30.00%

```python
# Get the monthly income of the employee
monthly_income = float(input("Enter the monthly income of the employee: "))

# Calculate the annual income
annual_income = monthly_income * 12

# Initialize tax
tax = 0

# Calculate the tax based on the slabs
if annual_income <= 300000:
    tax = 0
elif annual_income <= 500000:
    tax = (annual_income - 300000) * 0.05
elif annual_income <= 1000000:
    tax = (200000 * 0.05) + (annual_income - 500000) * 0.20
else:
    tax = (200000 * 0.05) + (500000 * 0.20) + (annual_income - 1000000) * 0.30

# Print the annual income and tax
print("Annual Income:",annual_income)
print("Annual Income Tax:",tax)
```

```
Enter the monthly income of the employee: 45000
Annual Income: 540000.0
Annual Income Tax: 18000.0
```

14) Write a Python program to calculate the surface area and volume of a cuboid.

```python
# Get the dimensions of the cuboid from the user
length = float(input("Enter the length of the cuboid: "))
width = float(input("Enter the width of the cuboid: "))
height = float(input("Enter the height of the cuboid: "))
```

```
# Calculate the volume of the cuboid
volume = length * width * height

# Calculate the surface area of the cuboid
surface_area = 2 * (length * width + width * height + height * length)

# Print the results
print("Volume of the cuboid:",volume)
print(f"Surface area of the cuboid:",surface_area)
```

```
⮑  Enter the length of the cuboid: 4.3
   Enter the width of the cuboid: 2.5
   Enter the height of the cuboid: 4
   Volume of the cuboid: 43.0
   Surface area of the cuboid: 75.9
```

15) Write a Python program to ask for height in cm and convert it into feet and inches.

```
# Conversion constants
cm_to_inch = 0.393701
inch_to_ft = 1 / 12

# Get the height in centimeters from the user
height_cm = float(input("Enter your height in centimeters: "))

# Convert height from centimeters to inches
height_inch = height_cm * cm_to_inch

# Convert height from inches to feet and inches
feet = int(height_inch * inch_to_ft)
inches = height_inch - (feet * 12)

# Print the results
print("Height in feet and inches:",feet,"feet",inches,"inches")
```

```
⮑  Enter your height in centimeters: 180
   Height in feet and inches: 5 feet 10.86618 inches
```

16) Write a Python program to check whether the given number is even or odd.

```
# Get the number from the user
number = int(input("Enter a number: "))

# Check if the number is even or odd
if number % 2 == 0:
    print(number,"is an even number.")
else:
    print(number,"is an odd number.")
```

```
⮑  Enter a number: 25
   25 is an odd number.
```

17) Write a Python program to check whether the entered number is positive and even, positive and odd, negative and even, or negative and odd.

```
# Get the number from the user
number = int(input("Enter a number: "))

# Check the sign and parity of the number
if number > 0 and number % 2 == 0:
  print(number,"is positive and even")
elif number < 0 and number % 2 == 0:
  print(number,"is negative and even")
elif number > 0 and number % 2 != 0:
  print(number,"is positive and odd")
else:
  print(number,"is negative and odd")
```

```
⮑  Enter a number: -77
   -77 is negative and odd
```

18) Write a Python program to print numbers from 1 to 10 using range(n) function.

```
# Print numbers from 1 to 10
for number in range(1, 11):
    print(number)
```

```
1
2
3
4
5
6
7
8
9
10
```

19) Write a Python program to check whether the number input by the user is an Armstrong number or not.

```
num = int(input("Enter a number:"))
Sum=0
temp = num
while temp>0:
  digit = temp % 10
  Sum = Sum + (digit ** 3)
  temp //= 10
if num == Sum:
  print(num,"is an armstrong number")
else:
  print(num,"is not an armstrong number")
```

```
Enter a number:153
153 is an armstrong number
```

20) Write a program to generate the following pattern: 11111
2222
333
44
5

```
rows = 5

for i in range(rows, 0, -1):
    for j in range(i):
        print(rows - i + 1, end='')
    print()  # Move to the next line after printing all characters for the current row
```

```
11111
2222
333
44
5
```

21) Write a Python program to take temperature for all 7 days of a week and display the average temperature of that week.

```
# Initialize variables to store the total temperature
total_temp = 0

# Input temperatures for each day of the week
for day in range(1, 8):
    temp = float(input(f"Enter the temperature for day{day}: "))
    total_temp = total_temp + temp

# Calculate the average temperature
average_temp = total_temp / 7

# Display the average temperature
print("The average temperature for the week is:",average_temp,"°C")
```

```
Enter the temperature for day1: 23
Enter the temperature for day2: 20
Enter the temperature for day3: 25
Enter the temperature for day4: 30
Enter the temperature for day5: 33
Enter the temperature for day6: 32
Enter the temperature for day7: 31
The average temperature for the week is: 27.714285714285715 °C
```

22) Write a Python program to check whether a given number is palindrome or not.

Eg: Input = 313

Output = Yes, it's a palindrome.

```python
# Get the number from the user
number = input("Enter a number: ")

# Check if the number is a palindrome
if number == number[::-1]:
    print("Yes, it's a palindrome.")
else:
    print("No, it's not a palindrome.")
```

```
Enter a number: 315
    No, it's not a palindrome.
```