ASSIGNMENT 2

```
# 1. Write a Python program to check whether a given no is positive or negative.
n = int(input("Enter a number: "))
if n > 0:
    print("The number is positive.")
elif n < 0:
    print("The number is negative.")
else:
    print("The number is zero.")
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Enter a number: 45
The number is positive.
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# 2. Write a Python program to check whether the entered is an odd number or an even number
n = int(input("Enter a number: "))
if n%2 == 0:
    print("The number is even.")
else:
    print("The number is odd.")
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Enter a number: 55
The number is odd.
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# 3. Write a Python program to find the largest among three given numbers.
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
c = int(input("Enter third number: "))
if a >= b and a >= c:
    print("The largest number is:", a)
elif b >= a and b >= c:
    print("The largest number is:", b)
else:
    print("The largest number is:", c)
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Enter first number: 12
Enter second number: 3
Enter third number: 5
The largest number is: 12
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# 4. Write a Python program to test whether a given no is divisible by 7 or not.
n = int(input("Enter a number: "))
if n % 7 == 0:
    print("The number is divisible by 7.")
else:
    print("The number is not divisible by 7.")
```

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Enter a number: 88
The number is not divisible by 7.
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# 5. Write a Python program to test whether the given no is divisible by both 11 & 13.
n = int(input("enter a number: "))
if n % 11 == 0 and n % 13 == 0:
    print("The number is divisible by both 11 and 13.")
else:
    print("The number is not divisible by both 11 and 13.")
```

```
enter a number: 143
The number is divisible by both 11 and 13.
```

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# 6. Write a Python program to evaluate the following expression
# X = (a–b) / (c–d) and give the error message when c == d

a = int(input("enter a: "))
b = int(input("enter b: "))
c = int(input("enter c: "))
d = int(input("enter d: "))

x = (a-b) / (c-d)
```

```
if c == d:
    print("Error: c and d are equal, division by zero.")
else:
    print("The value of x is:", x)
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enter a: 3
enter b: 6
enter c: 8
enter d: 4
The value of x is: -0.75
```

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6# 7. If the cost price and selling price of an item is given as input through the keyboard, write a Python program to determi
# or incurred a loss. Also, determine how much profit he made or the loss he incurred.
cost_price = float(input("Enter the cost price: "))
selling_price = float(input("Enter the selling price: "))
if selling_price > cost_price:
    profit = selling_price - cost_price
    print("the seller has made a profit of:", profit)
elif selling_price < cost_price:
    loss = cost_price - selling_price
    print("the seller has incurred a loss of:", loss)
else:
    print("No profit, no loss.")
```

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Enter the cost price: 885
Enter the selling price: 900
the seller has made a profit of: 15.0
```

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# 8  A set of linear equations with two unknown x1 & x2 is given below.
# ax1 + bx2 = m
# cx1 + dx2 = n
# The set has unique solutions: x1 = (md–bn) / (ad–cb)
# & x2 = (na–mc) / (ad–cb)
# Provided the denominator (ad – cb) is not equal to zero.
# Write a Python program that will read the values of a, b, c, d, m, n and compute the
# values of x1 & x2 . An appropriate message is printed if (ad – cb) = 0.

a = int(input("enter a: "))
b = int(input("enter b: "))
c = int(input("enter c: "))
d = int(input("enter d: "))
m = int(input("enter m: "))
n = int(input("enter n: "))

deno = (a*d) - (c*b)

if deno == 0:
    print("Error: Denominator is zero, cannot calculate x1 and x2.")
else:
    x1 = (m*d - n*b) / deno
    x2 = (a*n - c*m) / deno
    print("The value of x1 is:", x1)
    print("The value of x2 is:", x2)
```

```
enter a: 4
enter b: 2
enter c: 7
enter d: 6
enter m: 5
enter n: 3
The value of x1 is: 2.4
The value of x2 is: -2.3
```

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# 9. Write a Python program to check whether a given year is a leap year or not using
# nested if....else.
year = int(input("Enter a year: "))
if year % 4 == 0:
    print(year, "is a leap year.")
elif year % 100 == 0:
    print(year, "is not a leap year.")
elif year % 400 == 0:
    print(year, "is a leap year.")
else:
    print(year, "is not a leap year.")
```

```
Enter a year: 2004
2004 is a leap year.
```

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# 10. If the three sides of a triangle are entered through the keyboard, write a Python
# program to check whether the triangle is isosceles, or equilateral.
s1 = int(input("Enter side 1: "))
s2 = int(input("Enter side 2: "))
s3 = int(input("Enter side 3: "))
if s1 == s2 and s2 == s3:
    print("The triangle is equilateral.")
elif s1 == s2 or s2 == s3 or s1 == s3:
    print("The triangle is isosceles.")
else:
    print("The triangle is scalene.")
```

```
Enter side 1: 12
Enter side 2: 12
Enter side 3: 2
The triangle is isosceles.
```

```
1# 11. Write a Python program to perform arithmetic calculation(+, -, *, /) based on
# user's choice.
n1 = int(input("Enter first number: "))
n2  =int(input("Enter second number: "))

c = input("Enter an operator (+, -, *, /): ")

if c == '+':
    print("The result is:", n1 + n2)
elif c == '-':
    print("The result is:", n1 - n2)
elif c == '*':
    print("The result is:", n1 * n2)
elif c == '/':
    if n2 != 0:
        print("The result is:", n1 / n2)
    else:
        print("Error: Division by zero is not allowed.")
```

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Enter first number: 55
Enter second number: 20
Enter an operator (+, -, *, /): -
The result is: 35
```

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# 12. Write a Python program that asks the user to enter their marks in 3 subjects (each
# subject's full mark is 100). The program should determine the grade according to
# the following rules:
# A: Marks 90 and above
# B: Marks 80 to 89
# C: Marks 70 to 79
# D: Marks 60 to 69
# F: Marks below 60

s1 = int(input("Enter marks for subject 1: "))
s2 = int(input("Enter marks for subject 2: "))
s3 = int(input("Enter marks for subject 3: "))
total_marks = s1 + s2 + s3
average = total_marks / 3

if average >= 90:
    print("Grade: A")
elif average >= 80:
    print("Grade: B")
elif average >= 70:
    print("Grade: C")
elif average >= 60:
    print("Grade: D")
else:
    print("Grade: F")
```

```
Enter marks for subject 1: 87
Enter marks for subject 2: 80
Enter marks for subject 3: 91
Grade: B
```

```python
# 13. Write a Python program that asks the user to input their age. Based on the age
# entered, classify the person into one of the following categories:
# Child: Age 0 to 12 years
# Teenager: Age 13 to 19 years
# Adult: Age 20 to 59 years
# Senior Citizen: Age 60 years and above

age = int(input("Enter your age: "))
if age < 0:
    print("Invalid age entered.")
elif age <= 12:
    print("Child")
elif age <= 19:
    print("Teenager")
elif age <= 59:
    print("Adult")
else:
    print("Senior Citizen")
```

```
Enter your age: 20
Adult
```

```python
# 14. Write a Python program to get the total units consumed from the user and calculate
# the electricity bill for that customer based on the following slab rates:
# First 100 units --> 5 per unit
# Next 100 units (101–200) --> 7 per unit
# Above 200 units --> 10 per unit

units = int(input("Enter total units consumed: "))
if units <= 100:
    bill = units * 5
elif units <= 200:
    bill = (100 * 5) + ((units - 100) * 7)
else:
    bill = (100 * 5) + (100 * 7) + ((units - 200) * 10)

print("Total electricity bill is:", bill)
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```
Enter total units consumed: 253
Total electricity bill is: 1730
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```python
# 15. Write a Python program that asks the user to input their weight (in kilograms) and
# height (in meters). The program should:
# Calculate the BMI
# Classify the BMI result into
# categories:
# Underweight: BMI < 18.5
# Normal weight: BMI 18.5 to 24.9
# Overweight: BMI 25.0 to 29.9
# Obese: BMI 30.0 and above

weight = float(input("Enter your weight in kg: "))
height = float(input("Enter your height in meters: "))
bmi = weight / (height ** 2)
+
if bmi < 18.5:
    print("Underweight")
elif 18.5 <= bmi < 25:
    print("Normal weight")
elif 25 <= bmi < 30:
    print("Overweight")
else:
    print("Obese")
```

```
Enter your weight in kg: 55
Enter your height in meters: 1.52
Normal weight
```