Qatar University - College of Engineering

Department of Computer Science and Engineering

**Computer Programming – Fall 2020**

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**HW #2 - Functions (Maximum 3 Students)**

**Answers Sheet**

|  |  |
| --- | --- |
| **Student Name** |  |
| **Student Name** |  |
| **Student Name** |  |
| **Grading** | |
| **Total (100)** |  |

* Download and submit hardcopy at the day of your midterm exam.
* Upload all code in the answer form. Also upload all the code files.
* File names should be prog-1, prog-2, and so on.

1. **Program-1**

def computeArea(a, b, h):

    A = (1/2)\*(a+b)\*h

    return A

def main():

    # receive values.

    upperSide = float(input('Enter the upper side:'))

    bottomSide = float(input('Enter the bottom side:'))

    height = float(input('Enter the height of Trapezoid:'))

    # Call the function.

    area = computeArea(upperSide, bottomSide, height)

    print('The area of Trapezoid is : ', area)

main()

1. **Program-2**

def Factorial(n):

    fact = 1

    if n < 0:

        fact = 'Error'

    elif n == 0:

        fact = 1

    else:

        x = n

        while x > 0:

            fact = fact \* x

            x -=1

    return fact

def main():

    number = int(input('Enter positive number:'))

    print('Factorial (', number, ') = ', Factorial(number))

main()

1. **Program-3**

def Factorial(n):

    fact = 1

    if n < 0:

        fact = 'Error'

    elif n == 0:

        fact = 1

    else:

        x = n

        while x > 0:

            fact = fact \* x

            x -=1

    return fact

def main():

    for x in range(1 , 11):

        print('Factorial (', x ,') = ', Factorial(x))

main()

1. **Program-4**

def maximum(a, b, c):

    if a >= b:

        if(a >= c):

            max = a

        else:

            max = c

    elif b > a:

        if(b >= c):

            max = b

        else:

            max = c

    return max

def main():

    num1 = float(input('Enter 1st number:'))

    num2 = float(input('Enter 2nd number:'))

    num3 = float(input('Enter 3rd number:'))

    print('the maximum is: ', maximum(num1, num2, num3) )

main()

1. **Prgogram-5**

def is\_prime(n):

    if n==2:

        Prime = True

    elif n > 2:

        for i in range(2,n):

            if (n % i) == 0:

                Prime = False

                break

            else:

                Prime = True

    else:

        Prime = False

    return Prime

def main():

    number = int(input('Enter integer number:'))

    if is\_prime(number):

        print('\nthe number (',number, ') is prime \n' )

    else:

        print('the number (',number, ') is NOT prime \n' )

main()

1. **Program-6**

def is\_prime(n):

    if n==2:

        Prime = True

    elif n > 2:

        for i in range(2,n):

            if (n % i) == 0:

                Prime = False

                break

            else:

                Prime = True

    else:

        Prime = False

    return Prime

def main():

    for x in range(1, 101):

        if is\_prime(x):

            print(x)

main()

1. **Program-7**

def calc\_average(s1,s2,s3,s4,s5):

    average = (s1 + s2 + s3 + s4 + s5) / 5

    return average

def determine\_grade(sc):

    grade = False

    if sc >=90 and sc <= 100:

        grade = "A"

    elif sc >=80 and sc <= 89:

        grade = "B"

    elif sc >=70 and sc <= 79:

        grade = "C"

    elif sc >=60 and sc <= 69:

        grade = "D"

    elif sc >=0 and sc <= 59:

        grade = "F"

    return grade

def main():

    sc1 = int(input("Enter first score: "))

    sc2 = int(input("Enter second score: "))

    sc3 = int(input("Enter third score: "))

    sc4 = int(input("Enter forth score: "))

    sc5 = int(input("Enter fifth score: "))

    scoreList = [sc1, sc2, sc3, sc4, sc5]

    invalid\_Score = False

    for sc in scoreList:

        if sc not in range(0, 101):

            invalid\_Score = True

    if invalid\_Score == True:

        print("Plz, Enter a valid score between 0 and 100")

    else:

        avg = calc\_average(sc1,sc2,sc3,sc4,sc5)

        # print Grades Table:

        print ("\n  Score \t Grade")

        print("  =====================")

        for sc in scoreList:

            print("   ", sc , "\t\t  ", determine\_grade(sc))

        print ("  Average \t" , avg)

        print()

main()