Computer Science & Technology

Subject: Basic Application Development using Python

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Group: B

ফাংশন তৈরি

```
 def mul(x,y):
      return(x*y)
print(mul(10,15))
```

রিটার্ন ব্যাবহার না করে ফাংশন ডিফাইন

```
def welcome():
      print("Welcome to Computer Technology")
welcome()
```

রিটার্ন ব্যাবহার করে ফাংশন ডিফাইন

```
def square(x):
      y = x*x
      return y
print(square(5) + square(5))
```

প্যারামিটার ব্যাবহার না করে ফাংশন কলিং

```
def show():
      print("Do not adopt unfair means in the exam")
show()
```

```
# প্যারামিটারসহ ফাংশন কলিং
def add(a,b):
      return (a+b)
print(add(40,17))
print(add(400,177))
print(add(50,77))
```

ফাংশনের রিটার্ন
উদাঃ ১-

```
def my_func1():
      print("Hello World")
      return None

def my_func2():
      print("Hello World")
      return

def my_func3():
print("Hello World")
```

উদাঃ ২ -

```
def add(a,b,c):
      return(a+b+c)

temp = add(10,20,30)
print(temp)
```

কোনো ফাংশনে return এর পর কোনো statement থাকলে তা আর execute হবে না। যেমনঃ

```
def add_numbers(x,y):
      total = x+y
      return total
      print("This won't be printed")
print(add_numbers(15,35))
```

পাস বাই ভ্যালু

উদাঃ১

```
#!/usr/bin/env python3
#Function definition is here

def changeme(mylist):
      print("This changes a passed list into this function")
      mylist.append([1,2,3,4])
      print("Values inside the function: ", mylist)
      return
#Now you can call changeme function
mylist = [10,20,30]
changeme(mylist)
print("Values outside the function: ", mylist)
```

উদাঃ২

```
#!/usr/bin/env python3
#Function defination is here
def changeme(mylist):
      print("This changes a passed list into this function")
      mylist = [1,2,3,4]
      # This would assign new reference in mylist
      print("values inside the function: ", mylist)
      return
#Now you can call changeme function
mylist = [10,20,30]
changeme(mylist)
print("Values outside the function: ", mylist)
```

Required Argument

উদাঃ১

```
def Number(x,y,z):
      print(x,y,z)
Number(x=10,y=20) # TypeError
```

উদাঃ২

```
def Number(x,y,z):
      print(x,y,z)
Number(x=10,y=20,z=30)
```

Keyword Argument

```
def add(x,y,z):
      return x+y+z
print(add(x=2,y=3,z=4))
```

Default Argument

উদাঃ১

```
def Number(x,y=30,z=20):
      print(x,y,z)
Number(10)
```

উদাঃ২

```
def Number(x,y=30,z=20):
      print(x,y,z)
Number(50,60,70)
```

Variable Length Argument

উদাঃ১

```
def Show(*Numbers):
      print(type(Numbers))
      print(Numbers)
Show(50,60,70,80,90)
```

উদাঃ২

```
 def Show(**Numbers):
      print(type(Numbers))
      print(Numbers)
Show(x=2,y=3,z=4)
```

বর্তমান সময় নির্ণয়
i

```
mport time
localtime = time.localtime(time.time())
print("Local Current Time is: ", localtime)
```

আজকের তারিখ

```
from datetime import time
from datetime import date
from datetime import datetime
today = date.today()
print("Current Date is: ", today)
```

গতদিনের তারিখ

```
from datetime import date
from datetime import timedelta
def yesterday():
      today = date.today()
      yesterday = today - timedelta(days=1)
      return yesterday

print("Today's Date is: ", today)
print("Yesterday was : ", yesterday())
```

আগামী দিনের তারিখ

```
from datetime import date
from datetime import timedelta
def tomorrow():
      return date.today()+timedelta(days=1)
print("Today's Date is: ", date.today())
print("Yesterday will be : ", tomorrow())
```

আজকের তারিখ ও সময় নির্ণয়

```
from datetime import time
from datetime import date
from datetime import datetime
today = datetime.today()
print("Today's Date & Time is :", today)
```

ডেইট টাইম মডিউল
উদাঃ১

```
import datetime
n = datetime.datetime.now()
t = datetime.datetime.today()
u = datetime.datetime.utcnow()

print("Now :", n)
print("Today :", t)
print("UTC Now :", u)
```

উদাঃ২

```
import datetime
t = datetime.time(12,46,30)
print("Time is :", t)
d = datetime.date.today()
print("Date is :", d)
dt = datetime.datetime.combine(d,t)
print("Date & Time is :", dt)
```

টাইম ডেল্টা মডিউল

```
from datetime import timedelta
#This represents 1 day
a = timedelta(days=1)
# Represents 1 hour
b = timedelta(hours=1)
# Subtract 1 hour from 1 day
c = a-b
print(c)
```

টাইম জোন মডিউল

```
import datetime
min6 = datetime.timezone(datetime.timedelta(hours=-6))
plus6 = datetime.timezone(datetime.timedelta(hours=6))
d = datetime.datetime.now(min6)
print(min6, ":", d)
print(datetime.timezone.utc,":",d.astimezone(datetime.timezone.utc))
print(plus6,":",d.astimezone(plus6))
d_system = d.astimezone()
print("Bangladesh Standard Time : ", d_system.tzinfo,":",d_system)
```

ফাংশন ব্যবহার করে আয়তক্ষেত্রের ক্ষেত্রফল নির্ণয়ের প্রোগ্রাম

```
def Area():
      length = int(input("Enter the value of length: "))
      width = int(input("Enter the value of width: "))
      RectangleArea = length*width
      print("Area of Rectangle is: ", RectangleArea)
Area()
```

ফাংশন ব্যবহার করে দুটি সংখ্যার মধ্যে বৃহত্তম সংখ্যাটি নির্ণয়ের প্রোগ্রাম

```
def Largest():
      Num1 = int(input("Enter the value of 1st Number"))
      Num2 = int(input("Enter the value of 2nd Number"))
      if(Num1>Num2):
            print("Largest Number is Number1 & it is= ", Num1)
      else:
            print("Largest Number is Number2 & it is= ", Num2)

Largest()
```

ফাংশন ব্যবহার করে কতগুলো সংখ্যার গুনফল নির্ণয়ের প্রোগ্রাম

```
def multiply(numbers):
      total = 1
      for x in numbers:
            total *= x
      return total
print(multiply(6,2,5,6,1))
```

ফাংশন ব্যবহার করে কোনো সংখ্যার ফ্যাক্টোরিয়াল মান নির্ণয়ের প্রোগ্রাম

```
def factorial(n):
      if n == 0:
            return 1
      else:
            return n * factorial(n-1)

n = int(input("Enter a number: "))
print(factorial(n))
```

ফাংশন ব্যবহার করে কোনো সংখ্যা মৌলিক কিনা তা নির্ণয়ের প্রোগ্রাম

```
def test_prime(n):
      if(n==1):
            return False
      elif (n==2):
            return True
      else:
            for x in range(2,n):
                  if(n%x==0):
                        return False
            return True
print(test_prime(int(input("Enter a number: "))))
```

ফাংশন ব্যবহার করে কোনো স্ট্রিংকে রিভার্স অর্ডারে সাজানোর প্রোগ্রাম

```
def string_reverse(str):
      rstr = ""
      index = len(str)
      while index > 0:
            rstr += str[index-1]
            index = index-1
      return rstr
print(string_reverse("123456789"))
```

ফাংশন ব্যবহার করে ত্রিভুজের ক্ষেত্রফল নির্ণয়ের প্রোগ্রাম

```
import math
def Triangle():
      a = int(input("Enter the value of a: "))
      b = int(input("Enter the value of b: "))
      c = int(input("Enter the value of c: "))

      if((a+b)>c and (b+c)>a and (c+a)>b):
            s = (a+b+c)/2
            Area = math.sqrt(s*(s-a)*(s-b)*(s-c))
            print("Area of the triange is: ", Area)
      else:
            print("The Triangle is not possible.")

Triangle()
```

ফাংশন ব্যবহার করে বৃত্তের ক্ষেত্রফল নির্ণয়ের প্রোগ্রাম

```
import math
def calculate_area(radius):
      myarea = math.pi*radius**2
      return myarea

radius = calculate_area(int(input("Enter the radius: ")))
print("The area of circle is: ", radius)
```

ফাংশন ব্যবহার করে ১ হতে ১০০ পর্যন্ত বিজোড় সংখ্যাগুলোর যোগফল নির্ণয়ের প্রোগ্রাম

```
def summation():
      n=1
      sum=0
      for i in range(100):
            if n%2 == 0:
                  continue
            sum = sum + n
      return sum
add = summation()
print("The summation is: ", add)
```

ফাংশন ব্যবহার করে ফিবোনাক্কি সিরিজ বের করার প্রোগ্রাম

```
def fibo(n):
      if n<=1:
            return n
      else:
            return(fibo(n-1)+fibo(n-2))
n = 10
print("Fibo Series...")
for i in range(n):
      print(fibo(i), end=" ")
```

File Opening & Closing functions

```
f = open("file.txt", "w"):
f.write("Welcome to python programming language.")
f.close()
```

```
f = open("file.txt", "r")
x = f.read()
print(x)
f.close()
```

```
my_file = open("test.txt", "w"):
my_file.write("Welcome to python programming language.")
my_file.close()
```

File Reading & Writing Functions

```
file = open("info.txt", "w")
file.write("Congratulations! You are now a python programmer.")
file.close()
```

```
info = open("info.txt", "a")
info.write("\nMy name is Md. Wahid Ullah.\n")
info.write("\nI'm graduated from DUET.\n")
info.write("\nMy district is Chattogram.\n")
info.write("\nI'm an employee of Haque Publication.\n")
info.write("\nMy position is Research & Writer.\n")
info.close()
```

```
info = open("info.txt", "r")
print(info.read(80))
info.close()
```

```
fread = open("info.txt","r")
print(fread.read())
fread.close()
```

```
fread = open("info.txt", "r")
for_one_char = fread.read(1)
print(for_one_char)
remaining_four_char = fread.read(4)
print(remaining_four_char)
rest_of_the_file = fread.read()
print(rest_of_the_file)
fread.close()
```

```
with open("app.log","w") as f:
      #first line
      f.write("Wow! Now I'm a python programmer.\n")
      # Second Line
      f.write("I'm trained by this book.\n")
      # Third line
      f.write("This book is published from Haque Publications.")
f.close()
```

```
with open("app.log", "r") as f:
      print(f.readlines())
      print(f.readlines())
f.close()
```

```
file = open("app.log", "r")
for f in file:
      print(f)
file.close()
```

Write Programs using file input & output Operations

```
def program2():
      f = open("MyFile.txt", "w")
      line1 = input("Enter the line1 text: ")
      line2 = input("Enter the line2 text: ")
      line3 = input("Enter the line3 text: ")
      new_line = "\n"
      f.write(line1)
      f.write(new_line)
      f.write(line2)
      f.write(new_line)
      f.write(line3)
      f.write(new_line)
      f.close()

program2()
```

```
def program4():
      with open("info.txt", "r") as f1:
            data = f1.read()
            count_capital = 0
            count_small = 0
            count_digits = 0
            for ch in data:
                  if ch.islower():
                        count_small += 1
                  if ch.isupper():
                        count_capital += 1
                  if ch.isdigit():
                        count_digits += 1
            print("Total number of capital letters are: ", count_capital)
            print("Total number of small letters are: ", count_small)
            print("Total number of digits are: ", count_digits)

program4()
```

```
def program9():
      f = open("info.txt", "r")
      print(f.tell())
      f.seek(4,0)
      print(f.read(5))
      f.seek(10,0)
      print(f.tell())
      print(f.read(10))


program9()
```