Basic

Hello World Printing :

```
print ('Hello World')                    #Hello World
```

Shape Printing :

```
print ('     /|')
print ('    / |')
print ('   /  |')
print ('  /   |')
print (' /____|')
```

Data Types :

String & integer print :

```
name="Zahid"                  #string type
age=26                        #integer type
print("My Name is "+name+" and my age is "+str(age))
#My name is Zahid and my age is 26
```

String , integer & boolean print:

```
name="Zahid"  #string type
age=26 #integer type
flag=True  #boolean type
print("My name is "+name+" and my age is "+str(age)+" and the statement is
"+str(flag))  #string & integer & boolean printing together
#My name is Zahid and my age is 26 and the statement is True
```

Float/Double print:

```
cgpa=3.60  #float type
print("My Result is "+str(cgpa)) #float & string print together
#My Result is 3.6
```

Type Casting :

```
name="Zahid"
age=26
cgpa=3.60
flag=True

cgpa=int(cgpa)  #float to integer type casting
print(cgpa)  #3

age=str(age)  #int to string type casting
print(age)  #26

age=float(age)  #string to float type casting
print(age)  #26.0
```

Line Break:

```
print("My name is\nZahid")
#My name is
#Zahid
```

Ignore Quotation Marks:

```
print("I completed PGD from \"BAU\"")
#I completed PGD from "BAU"
```

String

Upper Case & Lower Case :

```
phrase="MIT"
print(phrase.lower()+"  is Cool")  #mit is cool
print(phrase.upper()+"  is Cool")  #MIT is cool
```

Upper Case & Lower Case Check:

```
print(phrase.isupper())  #True
print(phrase.islower())  #False
```

Upper/Lower Check after upper/lower change :

```
phrase="Very Spooky"
print(phrase.upper().islower())  #False
```

String Length Check:

```
phrase="Mit"
print(len(phrase)) #3
```

String Index Array:

```
phrase="Massachusetts Institute of Technology"
print(phrase[0]) #M
print(phrase[5]) #c
print(phrase[-1]) #y
print(phrase.index("T")) #27
print(phrase.index("Ins")) #14

word = 'Did coding'
print(word[0:2])   # characters from position 0 (included) to 2 (excluded)
#Di
print(word[2:5])   # characters from position 2 (included) to 5 (excluded)
#d c
print(word[:2])    # character from the beginning to position 2 (excluded)
#Di
print(word[4:])    # characters from position 4 (included) to the end
#coding
print(word[-2:])   # characters from the second-last (included) to the end
#ng
print(word[:2] + word[2:])#Did coding
print(word[:4] + word[4:])#Did coding
```

String Character/Word Replace :

```
phrase="Massachusetts Institute of Technology"
print(phrase.replace("Massachusetts","Indian"))
#Indian Institute of Technology
```

Number Operator

```
print(3)#3
print(3.60)#3.6
print(-3.60)#-3.6
print(3.60+3)#6.6
print(6.60/3)#2.1999999999999997
print(6.60//3)#2.0 #floor division
print(1.60*3)#4.800000000000001
print(2**2)#4
print(8.60-3)#5.6
print(3*(4+5))#27
print(20%3)#2
```

String & Integer

```
num=5
print("My roll is "+str(num)) #need to type cast integer while printing with string
#My roll is 5
```

Math Functions

```
from math import *

my_num=-5
print(abs(my_num)) #-5
print(pow(2,2)) #4
print(max(3,4,5,7)) #7
print(min(2,3,1,-1)) #-1
print(round(4.50)) #5
print(ceil(4.30))#5
print(floor(4.70))#4
print(sqrt(36))#6
```

User Input

```
name=input("Please Enter Your Name \n")
age=input("Please Enter Your Age \n")
print(name+" : "+age)
```

Add Two Number from User Input

```
numOne=input("Enter the first number \n")
numTwo=input("Enter the second number \n")
result=int(numOne)+float(numTwo) #need to type cast
print(result)
```

MadLibs Games

```
name=input("Enter your name \n")
age=input("Enter your age \n")
cgpa=input("Enter your cgpa \n")
print("My name is "+name)
print("My age is "+age)
print("My cgpa is "+cgpa)
```

List

Array can store elements of only one data type but List can store the elements of different data types too

```
myList= ["Spiderman",2022,True,"Ironman","Xmen"]
print(myList)
print(myList[0])
print(myList[-1]) #last index : Xmen
```

Index Range

```
myList= ["Spiderman",2022,True,"Ironman","Xmen"]
print(myList[1:4]) #inclusive 1 to Exclusive 4
print(myList[1:]) #inclusive 1 to the end
print(myList[:3])#inclusive 0 to Exclusive 3
```

Modify an Index

```
myList= ["Spiderman",2022,True,"Ironman","Xmen"]
myList[4]="Harry Potter"
print(myList) #['Spiderman', 2022, True, 'Ironman', 'Harry Potter']
```

List Functions

Extend List

```
myList= ["Spiderman",2021,True]
yourList = ["Doctor Strange",2022,True]
myList.extend(yourList);
print(myList) #['Spiderman', 2021, True, 'Doctor Strange', 2022, True]
```

Append List

```
myList= ["Spiderman",2021,True]
myList.append(False);
print(myList) #['Spiderman', 2021, True, False]
```

Add two List

```
x=[1,2,3]
y=[4,5,6]
z=x+y
print(z) #[1, 2, 3, 4, 5, 6]
```

Insert & Remove in List

```
myList= ["Spiderman",2021,True,3.60]
myList.insert(1,2020) #inserting 2020 in position 1
myList.remove(3.60)  #remove 3.60 from the list
```

Pop & Clear

```
myList=["Spiderman",2021,True,3.60]
myList.pop()   #pop out the last data
myList.clear()  #clear all data
```

Index Search

```
myList= ["Spiderman",2021,True,3.60]
print(myList.index(3.60)) #3
```

Index Count

How many times one value is present in a list

```
myList= ["Spiderman",2021,True,3.60,"Doctor Strange",2022,3.60]
print(myList.count(3.60)) #2
```

List Sort & Reverse

```
myList= [55,11,77,22,99,44,33]
myList.sort()
myList.reverse()
print(myList)  #[99, 77, 55, 44, 33, 22, 11]
```

Copy List

```
myList= [55,11,77,22,99,44,33]
yourList=myList.copy()
```

Tuple

```
tupleCollection = (11,22,33,44,55,66,77,88,99,110)
print(tupleCollection[4])  #access tuple
tupleCollection[3]=121  #not possible – cant change or modify
```

Co ordinates

Coordinates Index

```
tupleCollection = [(11,22),(33,44),(55,66),(77,88)]
print(tupleCollection[1][0])#access
```

Functions

```
def custom_Func():
    print("This is a Custom Function for checking")
print("Before the Custom Function")
custom_Func()
print("After the Custom Function")
----------------------------------------------------------------------
```

Output:

Before the Custom Function

This is a Custom Function for checking

After the Custom Function

Arguments Passing

```
def custom_Func(name,age):
    print("My Name is "+name+". And my age is "+str(age))
custom_Func("Zahid",18)
```

Return Statements

```
def square(num):
    return num*num*num
value=square(3)
print(value)
```

Conditional Statements

If Else And Or Not

```
is_male = False
is_tall = True
if is_male and is_tall:
    print("Tall and Dashing Boy")
elif not(is_male) and is_tall:
    print("Tall but beautiful Girl")
elif not(is_male) and not(is_tall):
    print("Short Girl")
elif is_male or is_tall:
    print("Male or Tall or both")
else:
    print("3rd Gender")
```

If Else Comparison with

```
def maxNumber(numOne,numTwo,numThree):
    if numOne>=numTwo and numOne>=numThree:
        print(str(numOne)+" is greater")
    elif numTwo>=numOne and numTwo>=numThree:
        print(str(numTwo)+" is greater")
    elif numThree>=numOne and numThree>=numTwo:
        print(str(numThree)+" is greater")
    elif numOne==numTwo and numTwo==numThree:
        print("All are equal")
maxNumber(11,11,11)
```

If Else Equal and Not Equal

```
def checkEquality(numOne,numTwo):
    if numOne!=numTwo:
        print("Not Equal")
    elif numTwo==numOne:
        print("Equal")
checkEquality(11,11)
```

Basic Calculator

```
numberOne = int(input("Please Enter Number One"))
numberTwo = int(input("Please Enter Number Two"))
operator = input("Please Enter operator")
def calculate(numberOne,numberTwo):
    if operator == "+":
        return numberOne+numberTwo
    elif operator == "-":
        return numberOne-numberTwo
    elif operator == "*":
        return numberOne*numberTwo
    elif operator == "/":
        return numberOne/numberTwo
result=calculate(numberOne,numberTwo)
print("The result is "+str(result))
```

Dictionaries

```
Information={
    "name":"Md. Zahidur Rahman",
    "program":"Post Graduate Diploma in Information and Communication
Technology",
    "id":"PGD1727",
    "campus":"Bangladesh Agriculture University",
    "department":"Computer Science & Mathematics",
    "faculty": "Engineering & Technology"
}
print(Information['name'])
print(Information.get("id"))
print(Information.get("roll","Roll is not present")) #check the data presents
or not
```

Loop

While Loop

```
i=1
while i<=10:
    print(str(i))
    i+=1
```

Guess Game with While Loop

```
secret_code="spooky"
entered_code=input("Please Enter Your Code")

while (secret_code != entered_code):
      entered_code=input("Please Enter Your Code")
print("You Entered the correct code")
```

Guess Game with While Loop with attempt

```
secret_code="spooky"
entered_code=input("Please Enter Your Code \n")
count=1
flag=True
while secret_code!=entered_code and flag==True:
     if count<=3:
         entered_code=input("Please Enter Your Code || attempt :
"+str(count)+")
         count+=1
     else:
        flag=False
if flag:
    print("You Entered the correct code")
else:
    print("You lost")
```

For Loop

Char iteration

```
for char in "Bangladesh":
    print(char)
```

Array iteration

```
myList=[11,22,33,'xx','yy',44,55]
for iterator in myList:
    print(iterator)
```

Number iteration

```
for index in range(10):
    print(index)
```

Number iteration with start position

```
for index in range(3,10):
    print(index)
```

Array iteration with length

```
anotherList=[10,20,30,40,50,'xx','yy','zz']
for index in range(len(anotherList)):
    print(anotherList[index])
```

Exponent Function Using For Loop

```
def exponentFunction(base,power):
    result=1
    for i in range(power):
        result=result*base
    return result
result = exponentFunction(2,2)
print(result)
```

Two Dimensional Array

```
grid_list=[
    [11,22,33],
    [10,20,30],
    [5,6,7]
    ]
print(grid_list[1][2])
```

Two Dimensional Array through Loop

```
grid_list=[
    [11,22,33],
    [10,20,30],
    [5,6,7]
    ]
for row in grid_list:
    for column in row:
        print(column)
```

Translator

```
def translator(phrase):
    translation=""
    for char in phrase:
        if char.lower() in "aeiou":
            if char.isupper():
                translation=translation+"G"
            else:
                translation=translation+"g"
        else:
            translation=translation+char
    return translation
print(translator(input("Please Enter Your Phrase \n")))
```

Comments

```
#single line comment
'''
multi line comments
'''
```

Try & Catch Block

```
try:
    result=10/0
    idNumber=int(input("Enter your Roll"))
    print(idNumber)
except ZeroDivisionError as error:
    print(error)
except ValueError as error:
    print(error)
except:
    print("Other Error")
```

Read Files

```
file=open("file.txt","r") #open the file
print(file.readable()) #True
print(file.read()) #will read all the lines in the files
print(file.readline()) #will read all the lines in the files where the cursor is
print(file.readlines()) #will read all the lines in the files and will put each line in a array
print(file.readlines()[1]) #will read all the lines in the files & will put each line in a array and access in index
for i in file.readlines():
    print(i)
file.close()#close the file
```

Write Text on Files

```
f = open("file.txt", "w") #Write - will overwrite any existing content
f.write("Woops! I have deleted the content!")
f.close()
```

Append Text on Files

```
f = open("file.txt", "a") #Append - will append to the end of the file
f.write("Now the file has more content!")
f.close()
```

Writing HTML

```
file=open("index.html","w")
file.write("<p>hi this is cool</p>")
file.close()
```

Module Importing

check.py

```
def checkNumber(num):
    if(num%2==0):
        print("Even")
    else:
        print("Odd")
```

main.py

```
from check import checkNumber
checkNumber(2)
```

Md. Zahidur Rahman
BSc in CS(BRACU)
PGD in ICT(BAU)