4.2 Loops and Iterations – Exercise

Question 1

```
val = int(input())
for x in range (0, val):
    for i in range (0,val):
        print('*',end='')
    print ()
```

Question 2

```
i = int(input())
j = 2 # fix the code (1)
while (j <= (i//j)):
    if not(i%j):
        print("not a prime")
        break # fix the code (2)
    j = j+1 # fix the code (3)
if (j > i//j):
    print ("prime")
```

4.3 Input and Output – Exercise

Question 1

```
def get_input():
    # Only edit the code segment between the dashes
    # ------------------------------------
    a = int(input("Enter number one: "))
    b = int(input("Enter number two: "))
    # ------------------------------------
        print (a+b)
```

4.4 Functions – Exercise

Question 1

```
def sqr(n):
    return (n ** 2)
```

5.1 Files – Exercise

Question 1

```
File1 = open("file1.txt","r")
File2 = open("file2.txt","w")

LineOne = File1.readline()
File2.write(LineOne)
LineTwo = File1.readline()
File2.write(LineTwo)

File1.close()
File2.close()

File2Reading = open("file2.txt")
print(File2Reading.read())
File2Reading.close()
```

7.1 Programming a Calculator Stage 1

Question 1

```
while True:
  print("Select operation.")
  print("1.Add      : + ")
  print("2.Subtract : - ")
  print("3.Multiply : * ")
  print("4.Divide   : / ")
  print("5.Power    : ^ ")
  print("6.Remainder: % ")
  print("7.Terminate: # ")
  print("8.Reset    : $ ")


  def select_op(choice):
      operation = "+,-,*,/,^,%,#,$"
      if (choice in operation):
          if(choice == '#'):
          #program ends here
              print("Done. Terminating")
              exit()


          #Adding
          elif(choice == '+'):
              try:
                  num1 = input("Enter first number: ")
                  print (num1)
                  n1 = int(num1)
```

```
        num2 = input("Enter second number: ")
        print (num2)
        n2 = int(num2)
        adding = n1 + n2
        print(float(num1),"+",float(num2),"=", float(adding))
    except ValueError:
        pass

#Dividing
elif(choice == '/'):
    try:
        num1 = input("Enter first number: ")
        print (num1)
        n1 = int(num1)
        num2 = input("Enter second number: ")
        print (num2)
        n2 = int(num2)
        dividing = n1 / n2
        print (float(num1),"/",float(num2),"=",float(dividing))

    except ZeroDivisionError:
        print ("float division by zero")
        print (float(num1),"/",float(num2),"=","None")
    except ValueError:
        pass

#Substraction
elif (choice == '-'):
    try:
```

```
        num1 = input("Enter first number: ")
        print (num1)
        n1 = int(num1)
        num2 = input("Enter second number: ")
        print (num2)
        n2 = int(num2)
        sub = n1 - n2
        print (float(num1),"-",float(num2),"=",float(sub))

    except ValueError:
        print("Done. Terminating")
        exit()

#Multplication
elif(choice == '*'):
    try:
        num1 = input("Enter first number: ")
        print (num1)
        n1 = int(num1)
        num2 = input("Enter second number: ")
        print (num2)
        n2 = int(num2)
        Multplication = n1 * n2
        print(float(num1),"*",float(num2),"=", float(Multplication))
    except ValueError:
        pass



#Power
```

```
    elif(choice == '^'):
        try:
            num1 = input("Enter first number: ")
            print (num1)
            n1 = int(num1)
            num2 = input("Enter second number: ")
            print (num2)
            n2 = int(num2)
            Power = n1 ** n2
            print(float(num1),"^",float(num2),"=", float(Power))
        except ValueError:
            pass

    #Remainder
    elif(choice == '%'):
        try:
            num1 = input("Enter first number: ")
            print (num1)
            n1 = int(num1)
            num2 = input("Enter second number: ")
            print (num2)
            n2 = int(num2)
            Remainder = n1 % n2
            print(float(num1),"%",float(num2),"=", float(Remainder))
        except ValueError:
            pass


else:
```

```
        print ("Unrecognized operation")


 # take input from the user
 choice = input("Enter choice(+,-,*,/,^,%,#,$): ")
 print(choice)
 select_op(choice)
```

7.2 Programming a Calculator Stage 2 (Implement a history list)

Question 1

```
past_calculations =[];

def add(a,b):
 return a+b;

def subtract(a,b):
 return a-b;

def multiply (a,b):
 return a*b;

def divide(a,b):
 try:
  return a/b
 except Exception as e:
  print(e)
def power(a,b):
 return a**b
```

```
def remainder(a,b):
  return a%b


def history():
  if past_calculations:
    for index,calc in enumerate(past_calculations):
       print(calc);
  else:
    print("No past calculations to show");
    return 0;


def select_op(choice):
  if (choice == '?'):
    return history()
  if (choice == '#'):
    return -1
  elif (choice == '$'):
    return 0
  elif (choice in ('+','-','*','/','^','%')):
    while (True):
      num1s = str(input("Enter first number: "))
      print(num1s)
      if num1s.endswith('$'):
        return 0;
      if num1s.endswith('#'):
        return -1;


      try:
        num1 = float(num1s)
```

```
    break;
  except:
    print("Not a valid number,please enter again")
    continue

while (True):
  num2s = str(input("Enter second number: "))
  print(num2s)
  if num2s.endswith('$'):
    return 0;
  if num2s.endswith('#'):
    return -1;
  try:
    num2 = float(num2s)
    break
  except:
    print("Not a valid number,please enter again")
    continue

result = 0.0
last_calculation = ""
if choice == '+':
  result = add(num1, num2);
elif choice == '-':
  result = subtract(num1, num2);
elif choice == '*':
  result = multiply(num1, num2);
elif choice == '/':
  result =  divide(num1, num2);
```

```
    elif choice == '^':
      result = power(num1, num2);
    elif choice == '%':
      result = remainder(num1, num2);
    else:
      print("Something Went Wrong");

    last_calculation =  "{0} {1} {2} = {3}".format(num1, choice, num2, result)
    print(last_calculation )
    past_calculations.append(last_calculation);
  else:
    print("Unrecognized operation")

while True:
  print("Select operation.")
  print("1.Add      : + ")
  print("2.Subtract : - ")
  print("3.Multiply : * ")
  print("4.Divide   : / ")
  print("5.Power    : ^ ")
  print("6.Remainder: % ")
  print("7.Terminate: # ")
  print("8.Reset    : $ ")
  print("8.History  : ? ")

  # take input from the user
  choice = input("Enter choice(+,-,*,/,^,%,#,$,?): ")
  print(choice)
  if(select_op(choice) == -1):
```

```
#program ends here
print("Done. Terminating")
exit()
```