****

Practical No:1)To create line Editor with features like create is new file,open existing file,append in the the file,Save and print file as well as to insert,delete,copy & move lines in the file.

Class:TyBsc.Cs Roll no:**106**

****

```
class Node:
    def __init__(self, info=""):
        self.info = info
        self.next = None

start = None
temp = None
temp1 = None
prev = None
curr = None
copy = None

lno = 0
fn = ""

def insert():
    global start, lno
    new_info = input("\n\tENTER THE LINE :- ")
    new1 = Node(new_info)
    new1.next = None

    if start is None:
        start = new1
        lno += 1
        return

    pos = int(input("\n\tENTER THE POSITION :- "))

    if pos <= 0 or pos > lno + 1:
        print("\nInvalid position..!")
        return

    if pos == 1:
        new1.next = start
        start = new1
        lno += 1
        print(f"\n\t\tLine NO.. {lno} :- {new1.info}")
    elif pos == lno + 1:
        temp = start
        while temp.next is not None:
            temp = temp.next
        temp.next = new1
    else:
        i = 1
        temp = start
        while i < pos:
```

```
            prev = temp
            temp = temp.next
            i += 1
        prev.next = new1
        new1.next = temp
    lno += 1
def delete():
    global start, lno
    if start is None:
        print("The list is empty.. Nothing to delete..")
        return

    pos = int(input("\n\tENTER THE LINE NUMBER TO DELETE:- "))

    if pos < 1 or pos > lno:
        print("\nInvalid line number..!")
        return

    if pos == 1:
        start = start.next
    else:
        i = 1
        temp = start
        while i < pos - 1:
            temp = temp.next
            i += 1
        temp.next = temp.next.next
    lno -= 1
    print(f"\n\tLine {pos} deleted successfully..")
def display():
    global start
    temp = start
    i = 1
    while temp is not None:
        print(f"{i}: {temp.info}")
        temp = temp.next
        i += 1
def copy():
    global copy, start, lno
    pos = int(input("\n\tENTER THE LINE NUMBER TO COPY:- "))

    if pos < 1 or pos > lno:
        print("\nInvalid line number..!")
        return

    temp = start
    i = 1
    while i < pos:
        temp = temp.next
        i += 1

    copy = temp.info
```

```
    print("\n\tLine copied successfully..")

def paste():
    global copy, start, lno
    if copy is None:
        print("\nNothing to paste..")
        return

    new_info = copy
    new1 = Node(new_info)

    pos = int(input("\n\tENTER THE POSITION TO PASTE:- "))

    if pos <= 0 or pos > lno + 1:
        print("\nInvalid position..!")
        return

    if pos == 1:
        new1.next = start
        start = new1
        lno += 1
        print(f"\n\t\tLine NO {lno} :- {new1.info}")
    elif pos == lno + 1:
        temp = start
        while temp.next is not None:
            temp = temp.next
        temp.next = new1
    else:
        i = 1
        temp = start
        while i < pos:
            prev = temp
            temp = temp.next
            i += 1
        prev.next = new1
        new1.next = temp
    lno += 1
    print("\n\tLine pasted successfully..")
def save():
    global start, fn
    if start is None:
        print("The list is empty.. Nothing to save..")
        return

    filename = input("\n\tENTER THE FILE NAME TO SAVE :- ")

    try:
        with open(filename, 'w') as file:
            temp = start
            while temp is not None:
                file.write(temp.info + "\n")
                temp = temp.next
```

```
        print("\n\tFile saved successfully..")
        fn = filename  # Update the current file name
    except Exception as e:
        print(f"\n\tError : {str(e)}")

def openn():
    global start, lno, fn
    filename = input("\n\tENTER THE FILE NAME TO OPEN :- ")

    try:
        with open(filename, 'r') as file:
            lines = file.readlines()
            start = None
            lno = 0
            for line in lines:
                insert_at_end(line.strip())
        print("\n\tFile opened successfully..")
        fn = filename  # Update the current file name
    except FileNotFoundError:
        print(f"\n\tFile '{filename}' not found..")
    except Exception as e:
        print(f"\n\tError : {str(e)}")

def insert_at_end(info):
    global start, lno
    new1 = Node(info)
    new1.next = None

    if start is None:
        start = new1
    else:
        temp = start
        while temp.next is not None:
            temp = temp.next
        temp.next = new1
    lno += 1

while True:
    print("\n\t-----LINE EDITOR MENU--------")
    print("\n\t\t0: Exit\n\t\t1: Insert\n\t\t2: Delete\n\t\t3: Display\n\t\t4: Copy\n\t\t5: Paste\n\t\t6:
Save\n\t\t7: Open")
    ch = int(input("\n\n\tENTER YOUR CHOICE:- "))

    if ch == 0:
        print("The Line Editor is closed!!")
        break
    elif ch == 1:
        insert()
    elif ch == 2:
        delete()
    elif ch == 3:
        display()
```

```
    elif ch == 4:
        copy()
    elif ch == 5:
        paste()
    elif ch == 6:
        save()
    elif ch == 7:
        openn()
    else:
        print("\n\t.... Invalid Choice ....")
```

==========**Output**==========

```
-----LINE EDITOR MENU--------
            0: Exit
            1: Insert
            2: Delete
            3: Display
            4: Copy
            5: Paste
            6: Save
            7: Open

        ENTER YOUR CHOICE:- 1

        ENTER THE LINE :- Hello I'm Girish Pardeshi

        -----LINE EDITOR MENU--------

            0: Exit
            1: Insert
            2: Delete
            3: Display
            4: Copy
            5: Paste
            6: Save
            7: Open


        ENTER YOUR CHOICE:- 1

        ENTER THE LINE :- Im From Kandari

        ENTER THE POSITION :- 2

        -----LINE EDITOR MENU--------

            0: Exit
            1: Insert
            2: Delete
            3: Display
            4: Copy
            5: Paste
```

6: Save
7: Open

ENTER YOUR CHOICE:- 1

ENTER THE LINE :- Im a student of Moolji Jaitha College

ENTER THE POSITION :- 3

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari
3: Im a student of Moolji Jaitha College

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 2

ENTER THE LINE NUMBER TO DELETE:- 3

Line 3 deleted successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy

5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 6

ENTER THE FILE NAME TO SAVE :- Girish.txt

File saved successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 0
The Line Editor is closed!!

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 7

ENTER THE FILE NAME TO OPEN :- Girish.txt

File opened successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 1

ENTER THE LINE :- This is the Line Editor in Python

ENTER THE POSITION :- 3

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari
3: This is the Line Editor in Python

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 4

ENTER THE LINE NUMBER TO COPY:- 1
Line copied successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 5

ENTER THE POSITION TO PASTE:- 4

Line pasted successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari
3: This is the Line Editor in Python
4: Hello I'm Girish Pardeshi

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 6

ENTER THE FILE NAME TO SAVE :- Girish1.txt

File saved successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 0
The Line Editor is closed!!

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 7

ENTER THE FILE NAME TO OPEN :- Girish1.txt

File opened successfully..

-----LINE EDITOR MENU--------

0: Exit
1: Insert
2: Delete
3: Display
4: Copy
5: Paste
6: Save
7: Open

ENTER YOUR CHOICE:- 3
1: Hello I'm Girish Pardeshi
2: Im From Kandari
3: This is the Line Editor in Python
4: Hello I'm Girish Pardeshi

****

Practical No:2)Simulate CPU for SMAC0(Small Computer)

Class:TyBsc.Cs Roll no:**106**

****

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<dos.h>
//Simple MiniComputer Assemly Code 0
int main()
{
   static int mem[3000];
   static long prgmem[1000];
   int pc=1;
   char filename[15];
   FILE *fp;
   long intr,ir,acc=0;
   int addr,add,opc;
   //clrscr();
   printf("\n Enter the file name:-\t");
   scanf("%s",filename);
   fp=fopen(filename,"r");
   if(fp==NULL)
   {
   printf("\n Cannot disply file");
   getch();
   exit(0);
   }
  printf("\n------File opcode---Girish---\n");
  while(fscanf(fp,"%ld",&intr)!=EOF)
  {
   printf("\n\t%ld",intr);
   prgmem[pc]=intr;
   pc++;
  }
  printf("\n\n----------------------\n\n");
  pc=1;
  while(prgmem[pc])
  {
   ir=prgmem[pc];
   opc=ir/1000000;
   addr=ir%10000;
   switch (opc)
   {
      case 11: //Addition
      {
         acc=acc+mem[addr];
         pc++;
         break;
      }
     case 12: //Subtraction
      {
```

```
   acc=acc-mem[addr];
   pc++;
   break;
}
case 13: //Multiplication
{
   acc=acc*mem[addr];
   pc++;
   break;
}
case 14: //Division
{
   acc=acc/mem[addr];
   pc++;
   break;

}
case 21: //Load to Accume
{
   acc=mem[addr];
   pc++;
   break;
}
case 22:  //Store to Memory
{
   mem[addr]=acc;
   pc++;
   break;
}
case 30: //Jump
{
   pc=addr;
   break;
}
case 31:  //Jump when acc is +ve
{
   if(acc>0)
   pc=addr;
   else
   pc++;
   break;
}
case 32: //Jump when acc is -ve
 {
   if(acc<0)
   pc=addr;
   else
   pc++;
   break;
 }
 case 33:   //Jump when Acc is not Null
 {
```

```
            if(acc!=0)
            pc=addr;
            else
            pc++;
            break;
          }
          case 34: //jump when Acc is null
          {
            if(acc==0)
            pc=addr;
            else
            pc++;
            break;
          }
          case 23: //Increment acc++
          {
            acc=acc+1;
            pc++;
            break;
          }
          case 24: //Decrement acc--
          {
            acc=acc-1;
            pc++;
            break;
          }
          case 81: //Input
          {
            printf("\nEnter the number:-\t");
            scanf("%d",&mem[addr]);
            pc++;
            break;

          }
          case 82: //Output
          {
            printf("\nResult =\t%d",mem[addr]);
            pc++;
            getch();
            break;
          }
         case 90: //break

            exit(0);
            break;
         default:
            printf("\nInvalid  opcode %d is used");

    }

  }
}
```

==========Output==========

1)Addition of Two Numbers
Enter the file name:- 1)Add.txt

------File opcode---Girish---

81100001
81000002
21000001
11000002
22000002
82000002
90000000

Enter the number:- 34

Enter the number:- 26
Result = 60

==========

2)Subtraction of Two numbers
Enter the file name:- 2)Sub.txt

------File opcode---Girish---

81000001
81000002
21000001
12000002
22000003
82000003
90000000

Enter the number:- 32

Enter the number:- 30
Result = 2

==========

3)Multiplication of two numbers
Enter the file name:- 3)Multi.txt

------File opcode---Girish---

81100001
81000002
21000001
13000002
22000002
82000002

90000000

Enter the number:- 5

Enter the number:- 20
Result = 100
==========

Enter the file name:- 4)Div.txt

------File opcode---Girish---

81000001
81000002
21000001
14000002
22000003
82000003
90000000

Enter the number:- 100

Enter the number:- 5
Result = 20
==========
Enter the file name:- 5)Sqr.txt

------File opcode---Girish---

81000004
21000004
13000004
22000005
82000005
90000000

Enter the number:- 8

Result = 64
==========

Enter the file name:- 6)Cube.txt

------File opcode---Girish---

81000004
21000004
13000004
13000004

```
        22000005
        82000005
        90000000

----------------------
Enter the number:-      3

Result =        27
========================================================================
Enter the file name:-  7)Gcd.txt

------File opcode---Girish---

        81001000
        81001001
        21001000
        12001001
        34000015
        32000011
        21001000
        12001001
        22001000
        30000003
        21001001
        12001000
        22001001
        30000003
        82001001
        90000000

----------------------
Enter the number:-      25

Enter the number:-      15

Result =        5
```

==========

8)Factorial of given number
Enter the file name:- 8)Fact.txt

------File opcode---Girish---

81000101
21000101
14000101
22000102
22000103
21000101
13000102
22000102
21000101
12000103
22000101
22000104
31000006
82000102
90000000

Enter the number:- 5

Result = 120

==========