College Of Engineering Trivandrum

SYSTEM SOFTWARE LAB

Exercise 10: Absolute Loader Implementation

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1 Aim

Implement an absolute loader

2 Algorithm

```
step 1: Start
step 2: Read the object program name in variable name
step 3: fp <- open the file objProgram.txt in read mode //fp is the pointer to the file
step 4: line <- Read the first line from fp //header record
step 5: Store the characters from index 2 to 7 in line in a variable name1
step 6: If name is equal to name1, do the step 7
step 7: Repeat the following while eof of fp is not reached
        i)line <- Read the next line from fp
        ii)If line[0] is equla to 'T', do the steps iii to viii
            iii)Store the characters from index 2 to 7 in line in a variable stradd
            iv)iStradd <- atoi(stradd)
            v)i <- i+1
            vi)Store the characters from index i to i+1 in a  variable recLength
            v)i <- i+2
            vi)iRecLength=atoi(recLength)
            vii)i <- i+1
            viii)Repeat the following while iRecLength is greater then 0
                a)If line[i] is not equal to '^'
                    -Print "00",iStaddr,"\t",line[i],line[i+1]
                    -iStaddr <- iStaddr+1
                    -i <- i+2
                    -iRecLength <- iRecLength-1
                b)Else
                    -i <- i+1
        ix)Else if line[0] is equal to 'E', then
            a)Store the characters from index 2 to 7 in line in a variable stradd
            b)iStradd <- atoi(stradd) //moving to the start address specified by the end record
step 8: Close the file fp //objProgram.txt
step 9: Stop
```

3 Program Code

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>

void main()
{
    FILE * fp;

    int i, j;
    int iStaddr, iRecLength;
    char name[10], line[50], name1[10], staddr[10], recLength[2];

    printf("Enter program name : ");
    scanf("%s", name);
    fp = fopen("objProgram.txt", "r");
    fscanf(fp, "%s", line);

    for (i = 2, j = 0; i < 8; i++, j++)
```

```
        name1[j] = line[i];
    name1[j] = '\0';

    printf("name from obj. %s\n", name1);
    if (strcmp(name, name1) == 0)
    {
        while (!feof(fp))
        {
            fscanf(fp, "%s", line);
            if (line[0] == 'T')
            {

                for (i = 2, j = 0; i < 8, j < 6; i++, j++)
                    staddr[j] = line[i];
                staddr[j] = '\0';
                iStaddr = atoi(staddr);

                i++; // ^ separator
                recLength[0]=line[i];
                i++;
                recLength[1]=line[i];
                i++;
                recLength[3]='\0';

                iRecLength=atoi(recLength);

                i++;// ^ separator

                while(iRecLength>0)
                {
                    if (line[i] != '^')
                    {
                        printf("00%d \t %c%c\n", iStaddr, line[i], line[i+1]);
                        iStaddr++;
                        i = i + 2;

                        iRecLength--; //1 byte
                    }
                    else
                        i++;
                }
            }
            else if (line[0] = 'E')
            {
                for (i = 2, j = 0; i < 8; i++, j++)
                    staddr[j] = line[i];
                staddr[j] = '\0';
                iStaddr = atoi(staddr); //Moving to the start address specified in end record
            }
        }
    }

    fclose(fp);

}
```

4 Input Files and Output

```
1  H^SAMPLE^001000^0C
2  T^001000^09^001003^181006^0C1009^
3  T^002000^03^001010^
4  E^001000
```

Figure 1: objProgram.txt - conatins object program

```
shuhaib@linux:~/sslab/sslab12$ cc code12.c
shuhaib@linux:~/sslab/sslab12$ ./a.out
Enter the program name : SAMPLE

001000   00
001001   10
001002   03
001003   18
001004   10
001005   06
001006   0C
001007   10
001008   09
002000   00
002001   10
002002   10
shuhaib@linux:~/sslab/sslab12$
```

Figure 2: Output

5 Result

Program to Implement an absolute loader was successfully implemented and output was obtained using C programming language