Date: 27-03-2018

1. Design a syntax directed translator that will generate intermediate code for switch-case construct in C language.

Program:

```cpp
//p10_1.cpp
#include<bits/stdc++.h>

using namespace std;

string output[100];
int sum=0,top=-1;
int stac[50];

void threeAddressCode(){
        int cou=1,it=1;
        for(int i=0;i<sum;i++){
                if(output[i]=="switch"){
                        cout<<it<<". ";
                        it++;
                        cout<<"goto(10)"<<"\n";
                }
                else if(output[i]=="case"){
                        cout<<it<<". ";
                        it++;
                        cout<<output[i+3]<<"\n";
                        stac[top+1]=it-1;
                        top+=1;
                        cout<<it<<". ";
                        it++;
                        cout<<"goto NEXT"<<"\n";
                        cou++;
                }
                else if(output[i]=="default"){
                        cout<<it<<". ";
                        it++;
                        cout<<output[i+2]<<"\n";
                        stac[top+1]=it-1;
                        top+=1;
                        cout<<it<<". ";
                        it++;
                        cout<<"goto NEXT"<<"\n";
                        cou++;
                        break;
                }
        }

        int check=0;
        for(int i=0;i<sum;i++){
                if(output[i]=="case"){
                        cout<<it<<". ";
                        it++;
                        cout<<"if x="<<output[i+1]<<"
goto("<<stac[check]<<")"<<"\n";
                        check+=1;
                }
                else if(output[i]=="default"){
                        cout<<it<<". ";
                        it++;
                        cout<<"goto("<<stac[check]<<")"<<"\n";
```

```cpp
                            check+=1;
                    }
            }
}

int main(){
        ifstream file;
        file.open("switch_case.txt");
        if(file.is_open())
        {
                while(!file.eof())
                {
                        file>>output[sum];
                        sum++;
                }
        }
        file.close();

        cout<<"Intermediate Code for swtich case statements refer to swtich_case.txt for the
statements\n-------------------------------------------------------------------------------------\n";
        threeAddressCode();

        return 0;
}

//switch_case.txt
switch ( x ) {
        case 1 :
                a=1 ;
                break ;
        case 2 :
                a=2 ;
                break ;
        case 3 :
                a=3 ;
                break ;
        default :
                a=4 ;
                break ;
}
```

```
student@SWPC-12:~/115cs0250_compiler$ g++ p10_1.cpp
student@SWPC-12:~/115cs0250_compiler$ ./a.out
Intermediate Code for swtich case statements refer to swtich_case.txt for the statements
-------------------------------------------------------------------------------------
1. goto(10)
2. a=1
3. goto NEXT
4. a=2
5. goto NEXT
6. a=3
7. goto NEXT
8. a=4
9. goto NEXT
10. if x=1 goto(2)
11. if x=2 goto(4)
12. if x=3 goto(6)
13. goto(8)
student@SWPC-12:~/115cs0250_compiler$
```