Name Shubhangi Agrawal 20BCE1161
Preemptive SJF

Code:

```cpp
#include<bits/stdc++.h>
using namespace std;
using ll=long long;
void ynans(bool x){if(x) cout<<"YES"<<endl;else cout<<"NO"<<endl;}
#define vi vector<int>
#define rep(i,k,n) for(ll i=k;i<n;i++)
#define rof(i,k,n) for(ll i=k;i>n;i--)
#define pb(x) push_back(x)
#define sp(x,y) fixed<<setprecision(y)<<x
int sum() { return 0; }
template<typename T, typename... Args>
T sum(T a, Args... args) { return a + sum(args...); }
#define vc vector<char>
#define vll vector<ll>
#define vvi vector < vi >
#define pll pair<ll, ll>
#define ff first
#define ss second
#define casePrint(x,y) cout<<"Case #"<<x<<": "<<y;
#define all(c) c.begin(),c.end()
class processes{
    public:
    int bt;
    int at;
};
int main(){
    int n;
    cin>>n;
    processes p[n];
    int totaltime=0;
    rep(i,0,n){
        cin>>p[i].bt>>p[i].at;
        totaltime+=p[i].bt;
    }
    vi sequence;
    int pid=0;
    rep(i,0,totaltime){
```

```cpp
            int minbt=INT_MAX;
        rep(j,0,n){
            if(p[j].at<=i){
                if(p[j].bt<minbt && p[j].bt!=0){
                    pid=j;
                    minbt=p[j].bt;


                }
            }
        }
        if(p[pid].bt!=0)
        sequence.pb(pid+1);
        else
        sequence.pb(-1);
        p[pid].bt--;

    }
    int l=sequence.size();
    sequence.resize(l);
    cout<<"Sequence: ";
    cout<<sequence[0]<<" ";
    rep(i,1,l){
        if(sequence[i]!=sequence[i-1]&&sequence[i]!=-1)
        cout<<sequence[i]<<" ";

    }
    int awt=0;
    vvi processes_t(n);
    rep(i,0,n){
        rep(j,0,l){
            if(sequence[j]==i+1){
                processes_t[i].pb(j);


            }


        }
        int cnt=0;
        int ln=processes_t[i].size();
        processes_t[i].resize(ln);
        rep(k,1,ln){
            awt+=(processes_t[i][k]-processes_t[i][k-1]-1);
```

```
        }



    }
    cout<<"\nAWT:"<<((float)awt/n);
    int atat=0;
    for(int k=0;k<n;k++){

        for(int j=l-1;j>=0;j--){

            if(sequence[j]==k+1){
                atat+=(j+1-p[k].at);
                break;
            }


        }


    }
    cout<<"\nATAT: "<<((float)atat/n);

}
```

Output:

```
PS E:\VIT\4thsem\OS\lab\linuxpractice\20bce1161\March2> cd "e:\VIT\4thsem\OS\lab\linuxpractice\20bce1161\March2\" ; if ($?) { g++ p
reemptivesjf.cpp -o preemptivesjf } ; if ($?) { .\preemptivesjf }
5
13 0
4 2
1 3
2 4
1 5
Sequence: 1 2 3 4 5 2 1
AWT:2.4
ATAT: 6.8                                        >
PS E:\VIT\4thsem\OS\lab\linuxpractice\20bce1161\March2> cd "e:\VIT\4thsem\OS\lab\linuxpractice\20bce1161\March2\" ; if ($?) { g++ p
reemptivesjf.cpp -o preemptivesjf } ; if ($?) { .\preemptivesjf }
4
11 0
4 2
1 3
2 4
Sequence: 1 2 3 4 2 1
AWT:2.5
ATAT: 7
```