

```

public class Ministry { /22

    private String name;
    private double budget;

    private Department[] arDep;-----1
    private int nbd;-----1

    Ministry(String name, double budget, int size){ /2
        this.name = name;
        this.budget = budget;
        arDep = new Department[size]; -----1
        nbd = 0; -----1
    }

    Ministry(Ministry m){ /4
        name = m.name;
        budget = m.budget;
        arDep = new Department[m.arDep.length]; -----1
        nbd = m.nbd; -----1
        //alt: nbd = 0
        for(int i=0; i<m.nbd; i++)-----1
        {
            arDep[i] = new Department(m.arDep[i]); -----1
            //alt: addDepartment(m.arDep[i]);
        }
    }

    public boolean addDep(Department d){ /3
        if(nbd >= arDep.length) return false; -----1

        arDep[nbd++]=new Department(d); -----2
        return true;
    }

    public Department searchByID(int id) { /4
        for(int i=0;i<nbd;i++)-----1
        {
            if(arDep[i].getID() == id) -----1
                return arDep[i]; -----1
        }
        return null; -----1
    }

    public int countDep(int n){ /5

```

```
int count = 0; -----1
for(int i=0;i<nbd;i++)-----1
{
    if(arDep[i].getNbEmployee() >= n) -----1
        count++;-----1
}
return count; -----1
}

public void displayAll(){/2
    for(int i=0;i<nbd;i++)-----1
        arDep[i].display();-----1
}

}
```

```

public class Government { /20

    private String country;

    private Ministry[] arMin; -----1
    private int nbm; -----1

    Government(String country) /2
    {
        this.country = country;
        arMin = new Ministry[20]; -----1
        nbm = 0; -----1
    }

    public boolean addMinistry(Ministry m) /3
    {
        if(nbm >= arMin.length) return false; -----1

        arMin[nbm++] = new Ministry(m); -----2
        return true;
    }

    public int addMinistry(Ministry[] m) /7
    {
        int count = 0; -----1
        for(int i=0;i<nbm;i++)-----1
        {
            if(nbm < arMin.length) -----1
            {
                arMin[nbm++] = new Ministry(m[i]); -----2
                count++;-----1
            }
        }
        return count; -----1
    }

    //alt solution
    public int addMinistry(Ministry[] m) /7
    {
        int count = 0; -----1
        for(int i=0;i<nbm;i++)-----1
        {
            if(addMinistry(m[i])) -----3
                count++;-----1
        }
    }

```

```

    }
    return count; -----1
}

public Ministry[] largeMinistries(int x,int n) /6
{
    Ministry[] m = new Ministry[nbm]; -----1
    int j=0; -----1

    for(int i=0;i<nbm;i++)-----1
    {
        if(arMin[i].countDep(n) == x) -----1
            m[j++] = arMin[i]; -----1
    }
    return m; -----1
}
}

```

Ex3: /8

```
//Create the following 2 departments
```

```
Department d1 = new Department(111,200); -----1
```

```
Department d2 = new Department(222,100); -----1
```

```
//Create the ministry of "Education" with 10Millions SAR as budget and 5 departments
```

```
Ministry m = new Ministry("Education",10000000,5); -----1
```

```
//Add the department dep1 and dep2 to the ministry of "Education".
```

```
m.addDep(d1); -----1
```

```
m.addDep(d2); -----1
```

```
//Create a Government of the country "Peace".
```

```
Government g = new Government("Peace");-----1
```

```
//Add the ministry of "Education" to the government.
```

```
g.addMinistry(m); -----1
```

```
//Display all information of the department, of the ministry of "Education", having  
the ID = 123.
```

```
m.searchByID(123).display();-----1
```