UN wants to store information about the organization of its member countries and the provinces that these contain, attached with their GDP (gross domestic product). The information about a determined province is stored in the following struct:

```cpp
struct Province {
    string name;
    string capital;
    int population;
    int area;
    double gdp;
};
```

The information about a determined country is stored in the following struct:

```cpp
struct Country {
    string name;
    string capital;
    vector<Province> provs;
};
```

The information about all the countries is stored in a vector of countries:

```cpp
typedef vector<Country> Countries;
```

Using the previous definitions, implement the function

```cpp
double gdp(const Countries& p, char c, double d);
```

that returns the sum of the gross domestic products of all the provinces with density strictly greater than \( d \) of all the countries in \( p \) that starts with the letter \( c \).

**Observation**

You only need to submit the required classes; your main program will be ignored. Strictly obey the type definitions of the statement.

**Problem information**

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