

```
#include <iostream>
```

```
#include <vector>
```

```
// Абстрактные базовые классы всех возможных видов воинов
```

```
class Infantryman
```

```
{
```

```
public:
```

```
    virtual void info() = 0;
```

```
    virtual ~Infantryman() {}
```

```
};
```

```
class Archer
```

```
{
```

```
public:
```

```
    virtual void info() = 0;
```

```
    virtual ~Archer() {}
```

```
};
```

```
class Horseman
```

```
{
```

```
public:
```

```
    virtual void info() = 0;
```

```
    virtual ~Horseman() {}
```

```
};
```

```
// Классы всех видов воинов Римской армии
```

```
class RomanInfantryman: public Infantryman
```

```
{
```

```
public:

    void info() {

        cout << "RomanInfantryman" << endl;

    }

};
```

```
class RomanArcher: public Archer

{

public:

    void info() {

        cout << "RomanArcher" << endl;

    }

};
```

```
class RomanHorseman: public Horseman

{

public:

    void info() {

        cout << "RomanHorseman" << endl;

    }

};
```

```
// Классы всех видов воинов армии Карфагена

class CarthaginianInfantryman: public Infantryman

{

public:

    void info() {

        cout << "CarthaginianInfantryman" << endl;
```

```
    }  
};
```

```
class CarthaginianArcher: public Archer  
{  
public:  
    void info() {  
        cout << "CarthaginianArcher" << endl;  
    }  
};
```

```
class CarthaginianHorseman: public Horseman  
{  
public:  
    void info() {  
        cout << "CarthaginianHorseman" << endl;  
    }  
};
```

// Абстрактная фабрика для производства воинов

```
class ArmyFactory  
{  
public:  
    virtual Infantryman* createInfantryman() = 0;  
    virtual Archer* createArcher() = 0;  
    virtual Horseman* createHorseman() = 0;  
    virtual ~ArmyFactory() {}  
};
```

```
// Фабрика для создания воинов Римской армии
```

```
class RomanArmyFactory: public ArmyFactory
```

```
{
```

```
public:
```

```
    Infantryman* createInfantryman() {
```

```
        return new RomanInfantryman;
```

```
    }
```

```
    Archer* createArcher() {
```

```
        return new RomanArcher;
```

```
    }
```

```
    Horseman* createHorseman() {
```

```
        return new RomanHorseman;
```

```
    }
```

```
};
```

```
// Фабрика для создания воинов армии Карфагена
```

```
class CarthaginianArmyFactory: public ArmyFactory
```

```
{
```

```
public:
```

```
    Infantryman* createInfantryman() {
```

```
        return new CarthaginianInfantryman;
```

```
    }
```

```
    Archer* createArcher() {
```

```
        return new CarthaginianArcher;
```

```
    }
```

```
    Horseman* createHorseman() {
```

```
        return new CarthaginianHorseman;
    }
};
```

// Класс, содержащий всех воинов той или иной армии

```
class Army
{
public:
    ~Army() {
        int i;
        for(i=0; i<vi.size(); ++i) delete vi[i];
        for(i=0; i<va.size(); ++i) delete va[i];
        for(i=0; i<vh.size(); ++i) delete vh[i];
    }
    void info() {
        int i;
        for(i=0; i<vi.size(); ++i) vi[i]->info();
        for(i=0; i<va.size(); ++i) va[i]->info();
        for(i=0; i<vh.size(); ++i) vh[i]->info();
    }
    vector<Infantryman*> vi;
    vector<Archer*> va;
    vector<Horseman*> vh;
};
```

// Здесь создается армия той или иной стороны

```
class Game
```

```

{
    public:

    Army* createArmy( ArmyFactory& factory ) {

        Army* p = new Army;

        p->vi.push_back( factory.createInfantryman());

        p->va.push_back( factory.createArcher());

        p->vh.push_back( factory.createHorseman());

        return p;

    }

};

```

```

int main()

{
    Game game;

    RomanArmyFactory ra_factory;

    CarthaginianArmyFactory ca_factory;


    Army * ra = game.createArmy( ra_factory);

    Army * ca = game.createArmy( ca_factory);

    cout << "Roman army:" << endl;

    ra->info();

    cout << "\nCarthaginian army:" << endl;

    ca->info();

    // ...

}

```