
1- Create a set of pairs to store product names along with their respective prices. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء المنتجات مع أسعارها. طباعة pairs التي تم فرزها.

Input

```
Enter product name: Laptop
Enter price (0 to finish): $500
Enter price (0 to finish): $3589
Enter price (0 to finish): $0
Enter product name: smartphone
Enter price (0 to finish): $121
Enter price (0 to finish): $200
Enter price (0 to finish): $0
```

Output

```
Sorted Pairs:
Laptop
    Price: $500.00
    Price: $3589.00
smartphone
    Price: $121.00
    Price: $200.00
```

Solution

```cpp
// www.gammal.tech

  #include<iostream>
  #include<set>
  #include<string>
  #include<utility>
  #include<vector>
  #include<iomanip>

  using namespace std;

  int main() {
      set<pair<string, vector<double>>> s;

      for(int i = 0; i < 2; i++) {
          pair<string, vector<double>> p;
          cout << "Enter product name: ";
          cin >> p.first;

          more:
          double t;
          cout << "Enter price (0 to finish): $";
          cin >> t;
          if (t) {
              p.second.push_back(t);
              goto more;
          }

          s.insert(p);
      }

      set<pair<string, vector<double>>>::iterator it;

      cout << "Sorted Pairs:" << endl;
      for (it = s.begin(); it != s.end(); it++) {
          cout << (*it).first << endl;
          for (int j = 0; j < (*it).second.size(); j++)
              cout << "\t" << "Price: $" << fixed << setprecision(2) << (*it).second[j] << endl;
      }

      return 0;
  }
```

2- Create a set of pairs to store names along with multiple phone numbers for each name. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين الاسماء مع أرقام هواتف متعددة لكل اسم. طباعة pairs التي تم فرزها.

Input

```
Enter name: aly
Enter number (0 to finish): 123456789
Enter number (0 to finish): 0123456789
Enter number (0 to finish): 0
Enter name: zaki
Enter number (0 to finish): 0111111111
Enter number (0 to finish): 0222222222
Enter number (0 to finish): 0
```

Output

```
Sorted Pairs:
aly
    123456789
    123456789
zaki
    111111111
    222222222
```

Solution

```cpp
// www.gammal.tech


#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<int>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<int>> p;
        cout << "Enter name: ";
        cin >> p.first;

        more:
        int t;
        cout << "Enter number (0 to finish): ";
        cin >> t;
        if (t) {
            p.second.push_back(t);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<int>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << (*it).second[j] << endl;
    }

    return 0;
}
```

3- Create a set of pairs to store city names along with their respective populations. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء المدن مع سكانها. طباعة الأزواج التي تم فرزها.

Input

```
Enter city name: Tokyo
Enter population (0 to finish): 126868
Enter population (0 to finish): 268976
Enter population (0 to finish): 0
Enter city name: Mumbai
Enter population (0 to finish): 325946
Enter population (0 to finish): 0
```

Output

```
Sorted Pairs:
Mumbai
    Population: 325946
Tokyo
    Population: 126868
    Population: 268976
```

Solution

```cpp
// www.gammal.tech


#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<int>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<int>> p;
        cout << "Enter city name: ";
        cin >> p.first;

        more:
        int t;
        cout << "Enter population (0 to finish): ";
        cin >> t;
        if (t) {
            p.second.push_back(t);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<int>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Population: " << (*it).second[j] << endl;
    }

    return 0;
}
```

4- Create a set of pairs to store student names along with their respective grades. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء الطلاب مع درجاتهم الخاصة. طباعة pairs التي تم فرزها.

Input

```
Enter student name: ahmed
Enter grade (0 to finish): A
Enter grade (0 to finish): C
Enter grade (0 to finish): 0
Enter student name: adel
Enter grade (0 to finish): D
Enter grade (0 to finish): 0
```

Output

```
Sorted Pairs:
adel
    Grade: D
ahmed
    Grade: A
    Grade: C
```

Solution

```cpp
// www.gammal.tech


#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<char>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<char>> p;
        cout << "Enter student name: ";
        cin >> p.first;

        more:
        char t;
        cout << "Enter grade (0 to finish): ";
        cin >> t;
        if (t != '0') {
            p.second.push_back(t);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<char>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Grade: " << (*it).second[j] << endl;
    }

    return 0;
}
```

5- Create a set of pairs to store employee names along with their respective salaries. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء الموظفين مع رواتبهم. طباعة pairs التي تم فرزها.

Input

```
Enter employee name: Amr
Enter salary (0 to finish): $5151
Enter salary (0 to finish): $0
Enter employee name: aly
Enter salary (0 to finish): $6523
Enter salary (0 to finish): $0
```

Output

```
Sorted Pairs:
Amr
    Salary: $5151
aly
    Salary: $6523
```

Solution

```cpp
// www.gammal.tech


#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<double>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<double>> p;
        cout << "Enter employee name: ";
        cin >> p.first;

        more:
        double t;
        cout << "Enter salary (0 to finish): $";
        cin >> t;
        if (t) {
            p.second.push_back(t);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<double>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Salary: $" << (*it).second[j] << endl;
    }

    return 0;
}
```

6- Create a set of pairs to store country names along with their respective official languages. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء البلدان مع لغاتها الرسمية. طباعة pairs التي تم فرزها.

Input

```
Enter country name: france
Enter official language (0 to finish): french
Enter official language (0 to finish): 0
Enter country name: Japan
Enter official language (0 to finish): Japanese
Enter official language (0 to finish): 0
```

Output

```
Sorted Pairs:
Japan
    Language: Japanese
france
    Language: french
```

Solution

```cpp
// www.gammal.tech

#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<string>>> s;

    for(int i = 0; i < 2; i++) {
    pair<string, vector<string>> p;
        cout << "Enter country name: ";
        cin >> p.first;

        more:
        string language;
        cout << "Enter official language (0 to finish): ";
        cin >> language;
        if (language != "0") {
            p.second.push_back(language);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<string>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Language: " << (*it).second[j] << endl;
    }

    return 0;
}

    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Salary: $" << (*it).second[j] << endl;
    }

    return 0;
}
```

7- Create a set of pairs to store city names along with their respective temperatures. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء المدن مع درجات الحرارة الخاصة بها.
طباعة pairs التي تم فرزها.

Input

```
Enter city name: Cairo
Enter temperature (0 to finish): 23.5
Enter temperature (0 to finish): 0
Enter city name: Tokyo
Enter temperature (0 to finish): 20.2
Enter temperature (0 to finish): 25.5
Enter temperature (0 to finish): 0
```

Output

```
Sorted Pairs:
Cairo
    Temperature: 23.5°C
Tokyo
    Temperature: 20.2°C
    Temperature: 25.5°C
```

Solution

```cpp
// www.gammal.tech

#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<double>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<double>> p;
        cout << "Enter city name: ";
        cin >> p.first;

        more:
        double temperature;
        cout << "Enter temperature (0 to finish): ";
        cin >> temperature;
        if (temperature) {
            p.second.push_back(temperature);
            goto more;
        }

        s.insert(p);
    }

    set<pair<string, vector<double>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Temperature: " << (*it).second[j] << "°C" << endl;
    }

    return 0;
}
```

8- Create a set of pairs to store university names along with the number of students. Print the sorted pairs.

أنشئ set من pairs لتخزين أسماء الجامعات مع عدد الطلاب. طباعة pairs التي تم فرزها.

Input

```
Enter university name: Harvard
Enter number of students (0 to finish): 15000
Enter number of students (0 to finish): 0
Enter university name: MIT
Enter number of students (0 to finish): 12000
Enter number of students (0 to finish): 0
```

Output

```
Sorted Pairs:
Harvard
    Number of Students: 15000
MIT
    Number of Students: 12000
```

Solution

```cpp
// www.gammal.tech
#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<int>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<int>> p;
        cout << "Enter university name: ";
        cin >> p.first;

        more_students:
        int students;
        cout << "Enter number of students (0 to finish): ";
        cin >> students;
        if (students) {
            p.second.push_back(students);
            goto more_students;
        }

        s.insert(p);
    }

    set<pair<string, vector<int>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Number of Students: " << (*it).second[j] << endl;
    }

    return 0;
}
```

9- Create a set of pairs to store book genres along with the number of books in each genre. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أنواع الكتب مع عدد الكتب في كل نوع. طباعة pairs التي تم فرزها.

Input

```
Enter book genre: Fiction
Enter number of books (0 to finish): 50
Enter number of books (0 to finish): 0
Enter book genre: Mystery
Enter number of books (0 to finish): 30
Enter number of books (0 to finish): 0
```

Output

```
Sorted Pairs:
Fiction
    Number of Books: 50
Mystery
    Number of Books: 30
```

Solution

```cpp
// www.gammal.tech

#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<int>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<int>> p;
        cout << "Enter book genre: ";
        cin >> p.first;

        more_books:
        int books;
        cout << "Enter number of books (0 to finish): ";
        cin >> books;
        if (books) {
            p.second.push_back(books);
            goto more_books;
        }

        s.insert(p);
    }

    set<pair<string, vector<int>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Number of Books: " << (*it).second[j] << endl;
    }

    return 0;
}
```

10- Create a set of pairs to store sport names along with the number of players in each sport. Print the sorted pairs.

قم بإنشاء set من pairs لتخزين أسماء الرياضات مع عدد اللاعبين في كل رياضة. طباعة pairs التي تم فرزها.

Input

```
Enter sport name: Soccer
Enter number of players (0 to finish): 22
Enter number of players (0 to finish): 0
Enter sport name: Basketball
Enter number of players (0 to finish): 10
Enter number of players (0 to finish): 0
```

Output

```
Sorted Pairs:
Basketball
    Number of Players: 10
Soccer
    Number of Players: 22
```

Solution

```cpp
// www.gammal.tech

#include<iostream>
#include<set>
#include<string>
#include<utility>
#include<vector>

using namespace std;

int main() {
    set<pair<string, vector<int>>> s;

    for(int i = 0; i < 2; i++) {
        pair<string, vector<int>> p;
        cout << "Enter sport name: ";
        cin >> p.first;

        more_players:
        int players;
        cout << "Enter number of players (0 to finish): ";
        cin >> players;
        if (players) {
            p.second.push_back(players);
            goto more_players;
        }

        s.insert(p);
    }

    set<pair<string, vector<int>>>::iterator it;

    cout << "Sorted Pairs:" << endl;
    for (it = s.begin(); it != s.end(); it++) {
        cout << (*it).first << endl;
        for (int j = 0; j < (*it).second.size(); j++)
            cout << "\t" << "Number of Players: " << (*it).second[j] << endl;
    }

    return 0;
}
```