**Báo cáo bài tập thực hành**

**Tên SV: Đặng Quang Sơn**

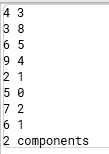
**Mã SV: 231230885**

1.Đã cài đặt môi trường

2.UF(khôi phục)

Bổ sung trong phương thức union().

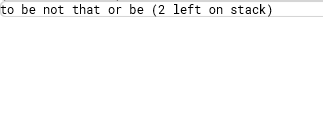
-Kết quả chạy hàm main:



3.Stack

Bổ sung trong phương thức push()

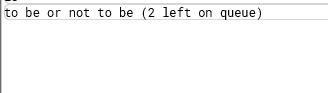
-Kết quả chạy hàm main:



4.Queue

Bổ sung trong phương thức enqueue(), dequeue().

-Kết quả chạy hàm main:



5.Division

Bổ sung lớp chia thực.

-Kết quả chạy hàm main:



6.Inversion: String( Tạo)

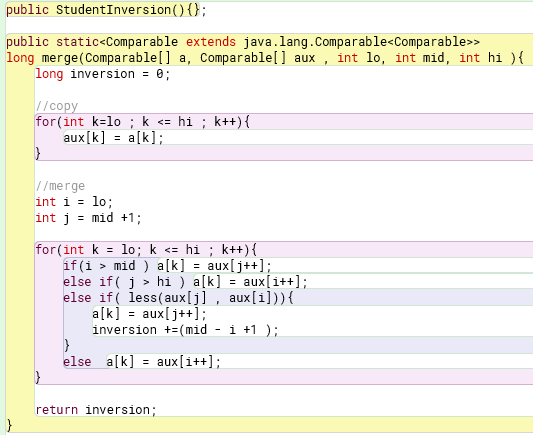
Cài Inversion cho String.

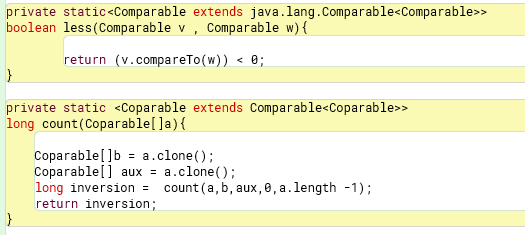
-Kết quả chạy hàm main:

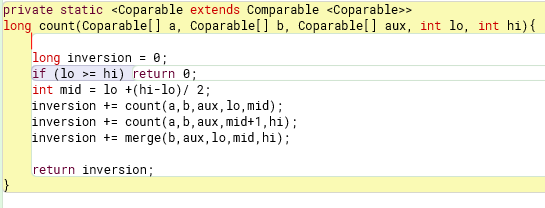


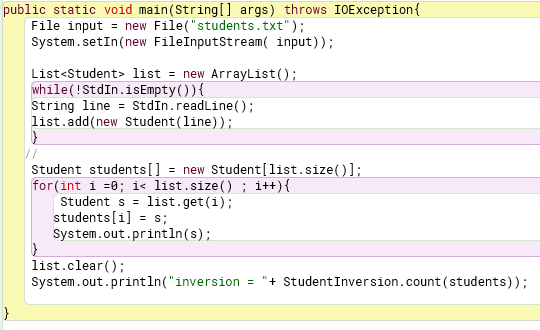
Áp dụng cho danh sách sinh viên.

-Phần code:

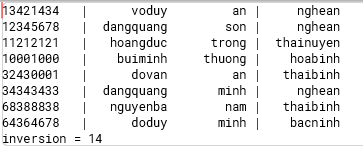






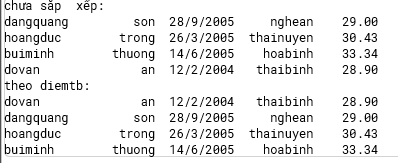


-Kết quả chạy hàm main:



7.Merge

-Kết quả chạy hàm main:



8.Closet pair( Khôi phục )

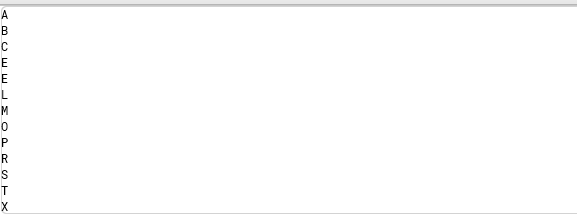
Khôi phục trong phương thức merge().

-Kết quả chạy hàm main:



9.Quick 3 way

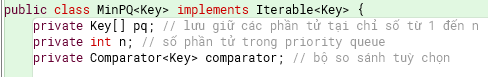
-Kết quả chạy hàm main:

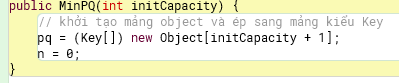


10.MinPQ(tạo)

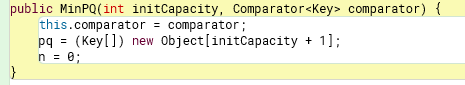
Tạo dựa trên MaxPQ.

-Phần code:

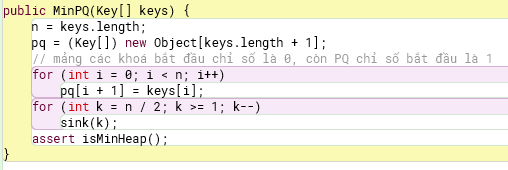




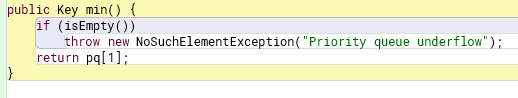


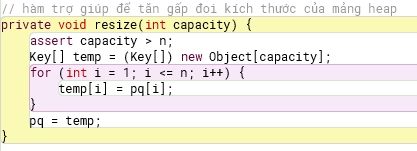


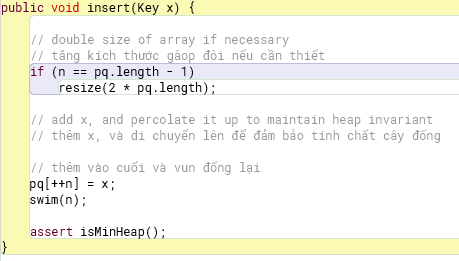


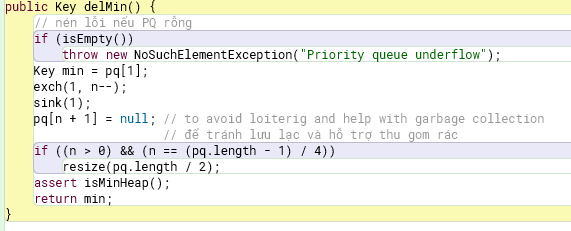


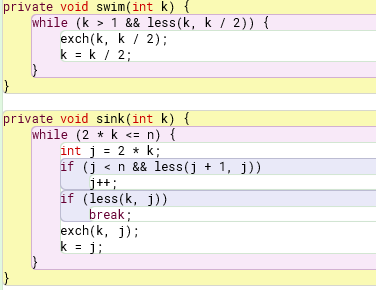


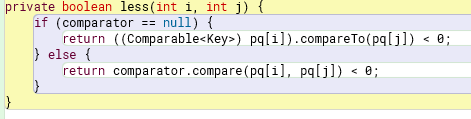


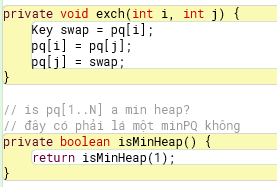


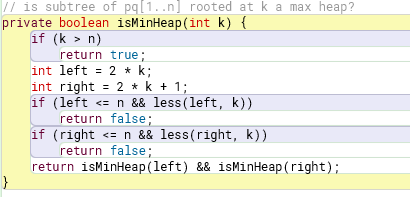


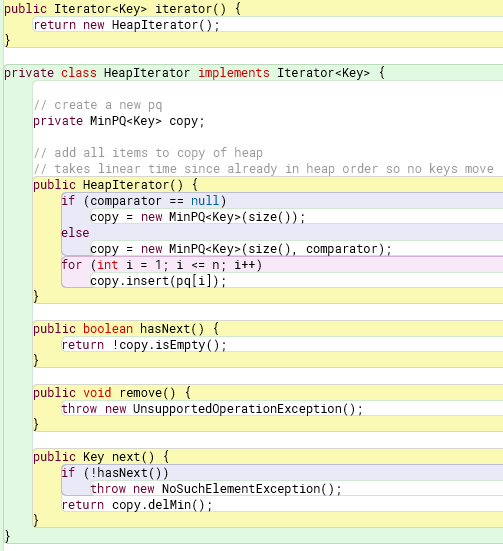


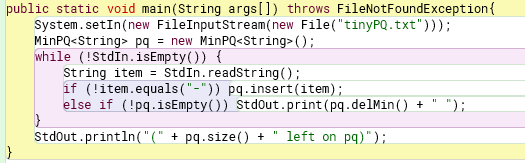












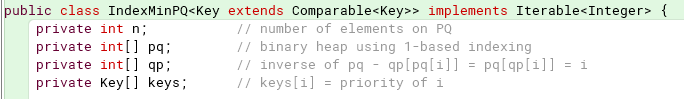
-Kết quả chạy hàm main:

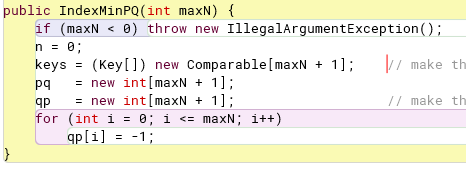


11.Index MinPQ( tạo)

Tạo dựa trên IndexMaxPQ.

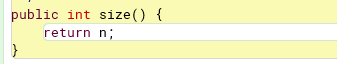
-Phần code:

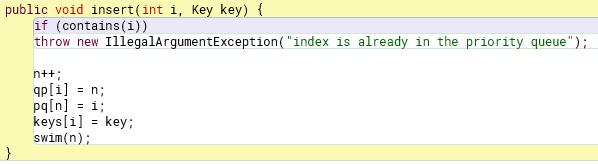


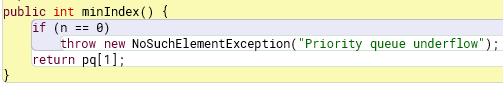


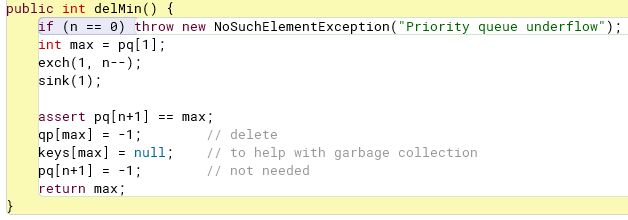


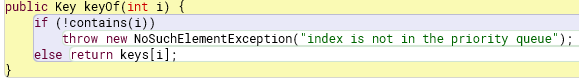


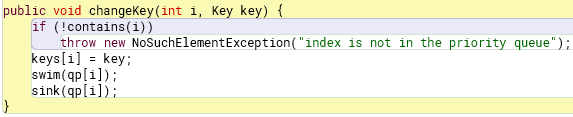


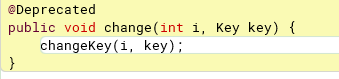


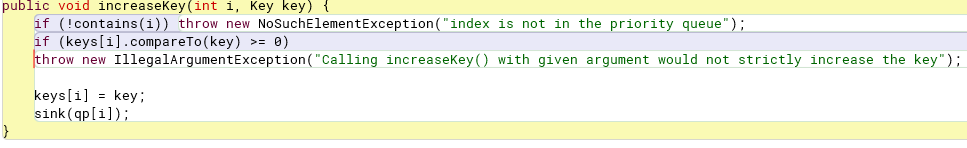


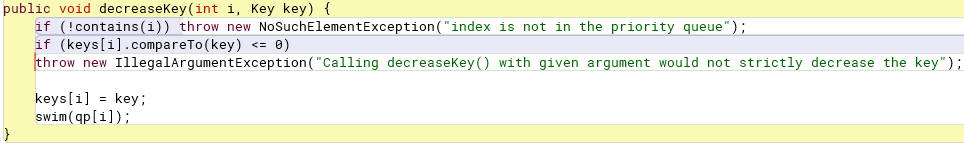


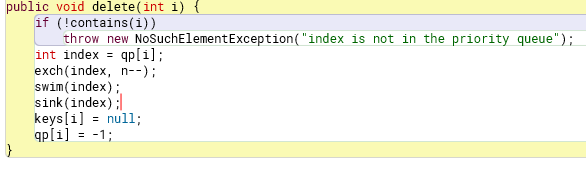


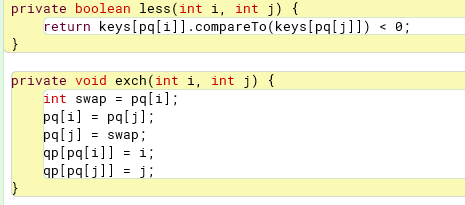


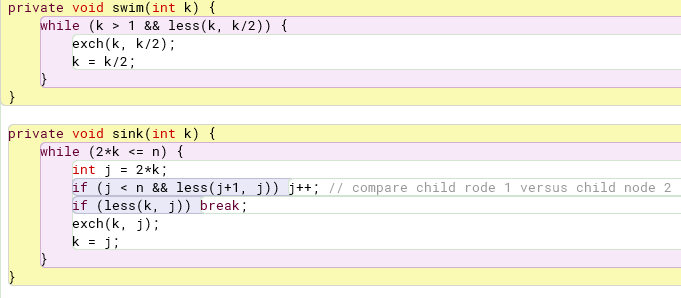


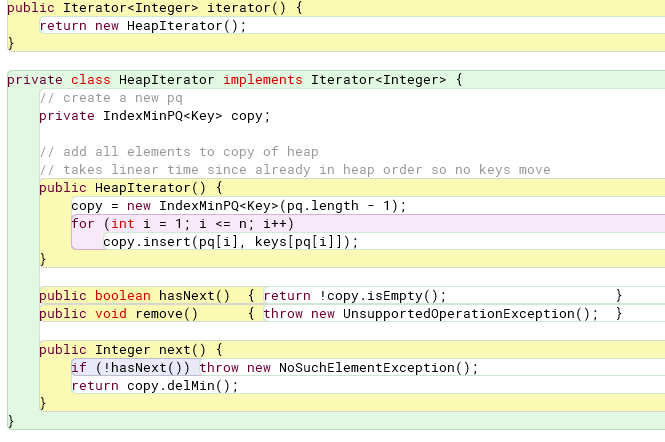


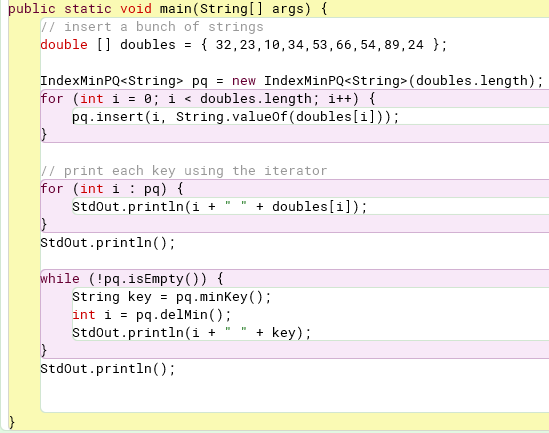




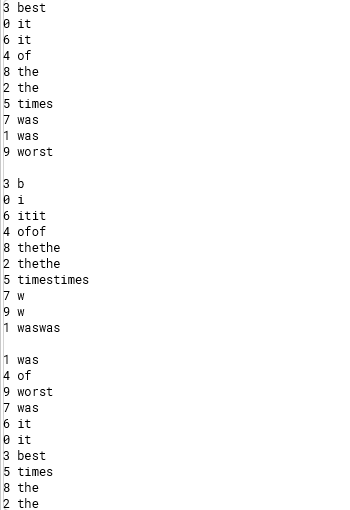








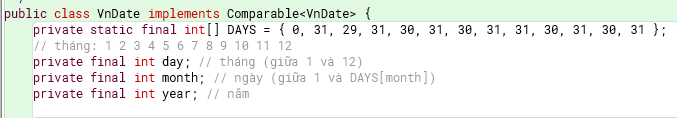
-Kết quả chạy hàm main:

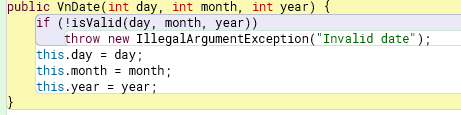


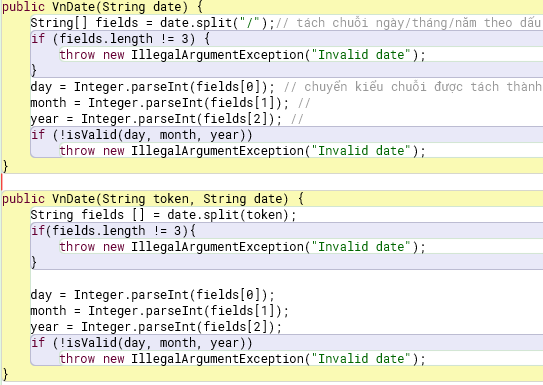
12.VNDate(tạo)

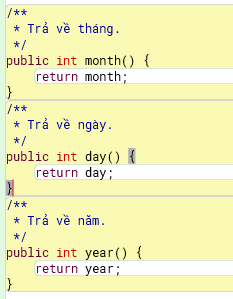
Tạo dựa trên Date.

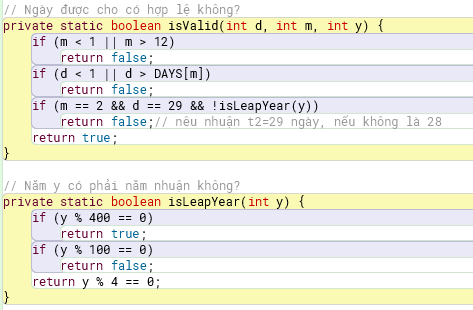
-Phần code:

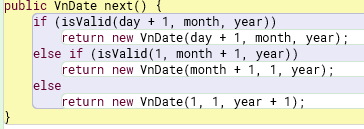


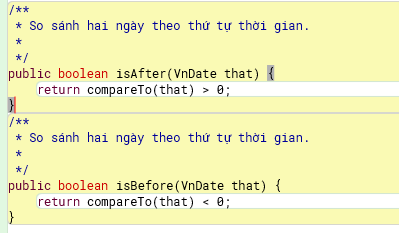


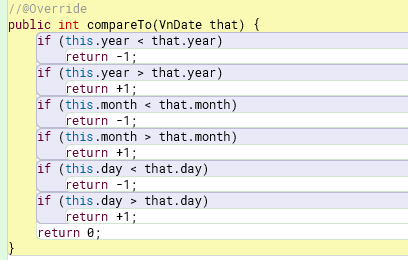


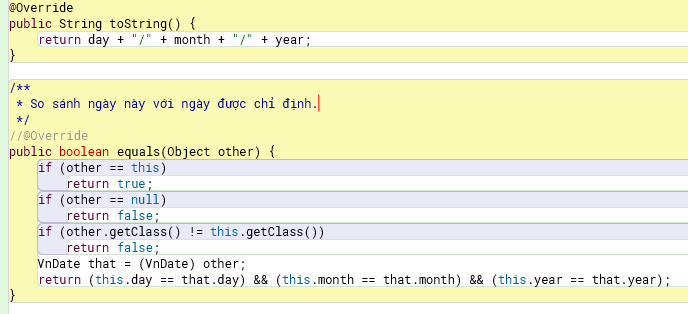


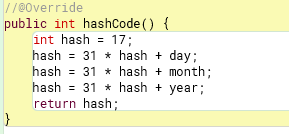


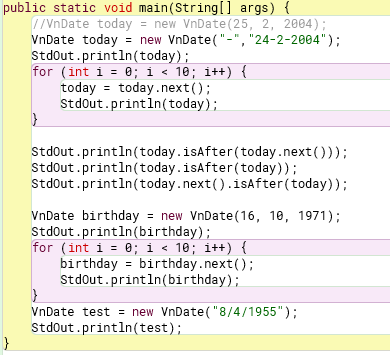




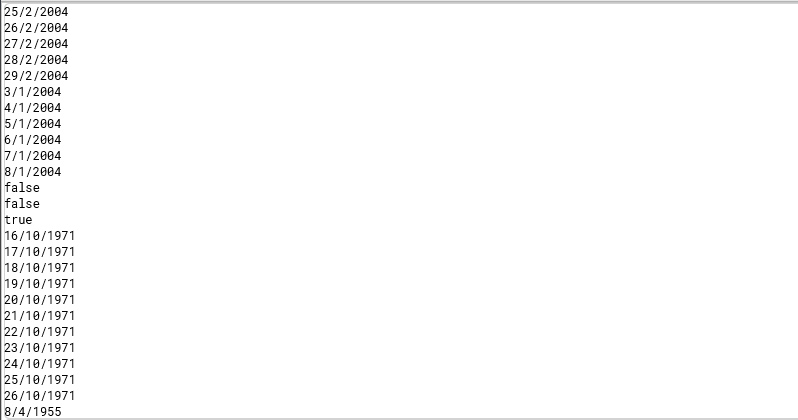








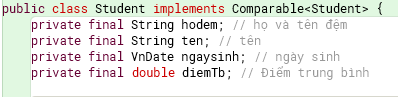
-Kết quả chạy hàm main:

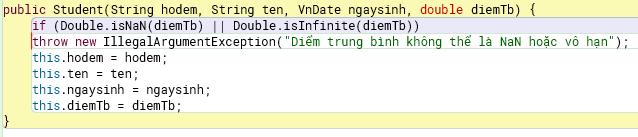


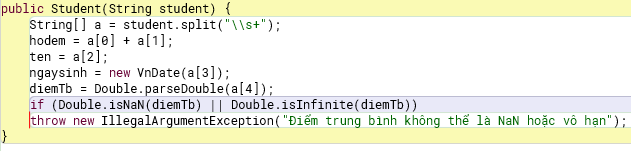
13.Student ( tạo)

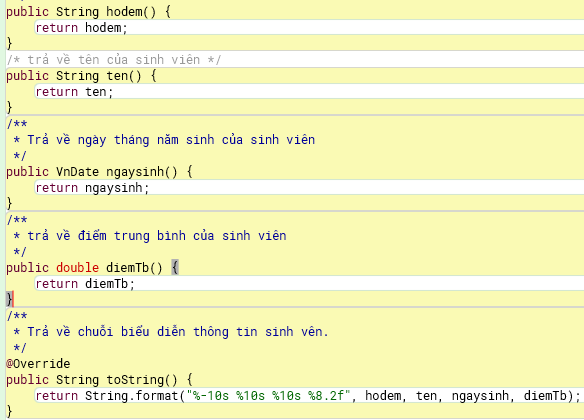
Cài đặt lớp Student Comparable

-Phần code:

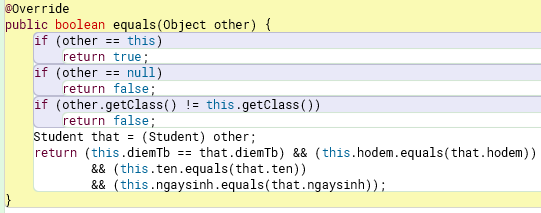


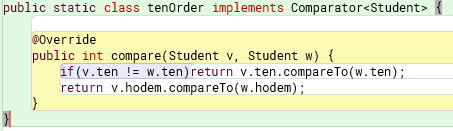


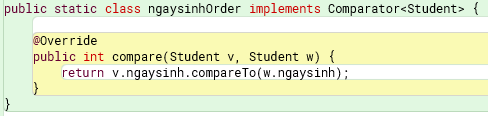


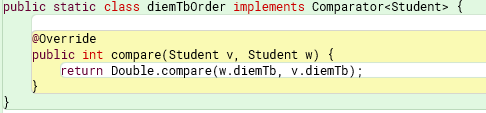








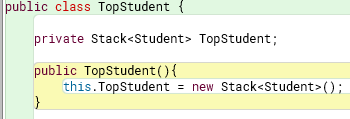


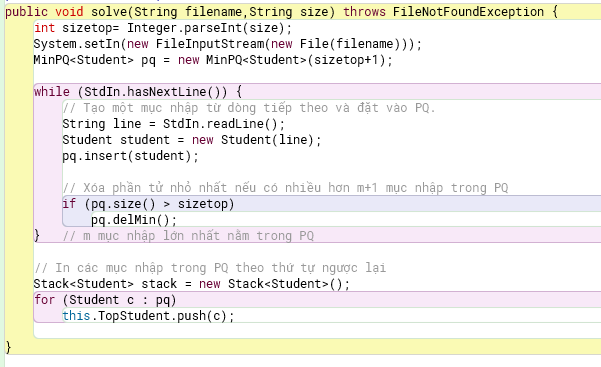


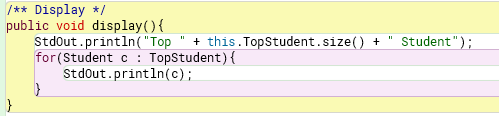
14.TopMSV( tạo)

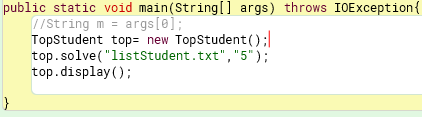
Đưa ra danh sách m sinh viên có điểm cao nhất.

-Phần code:

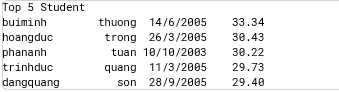








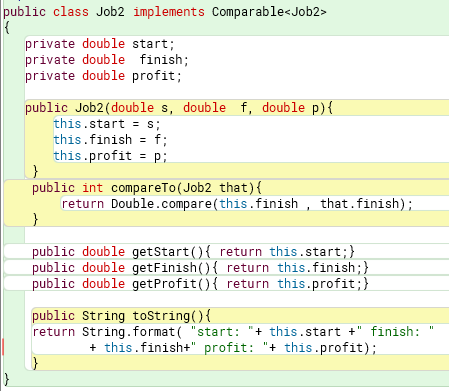
-Kết quả chạy hàm main:



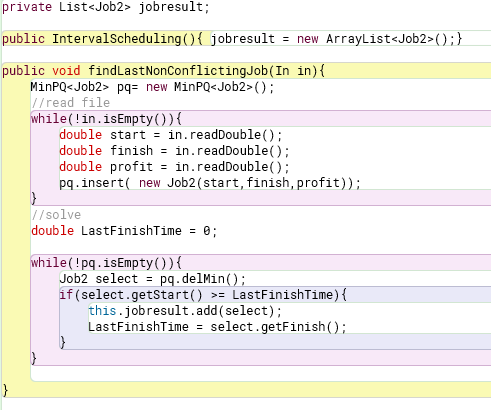
15.Interval Scheduling( tạo)

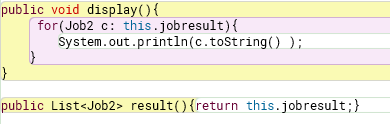
Chọn nhiều công việc nhất không xung đột .

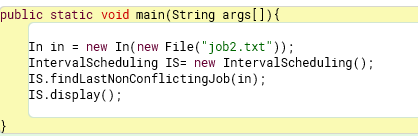
-Phần code:











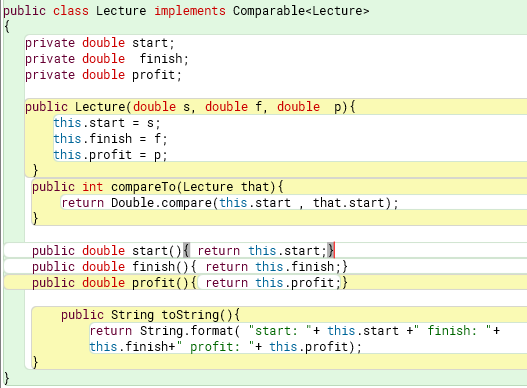
-Kết quả chạy hàm main:



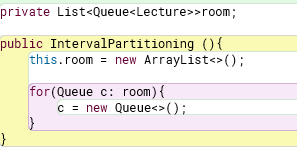
16.Interval Partitioning( tạo )

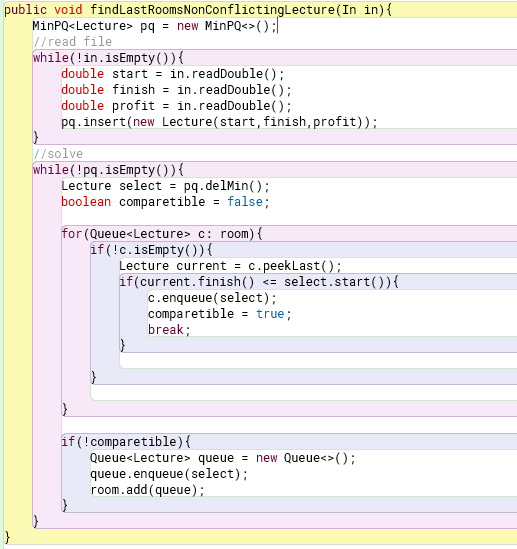
Sắp xếp sao cho tối thiểu phòng học nhất và không xung đột.

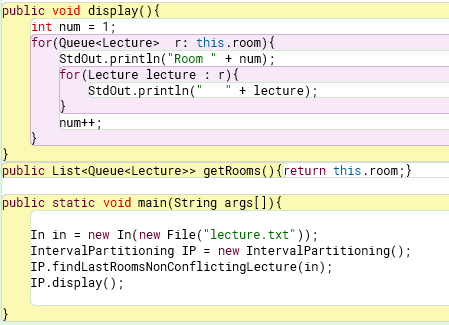
-Phần code:



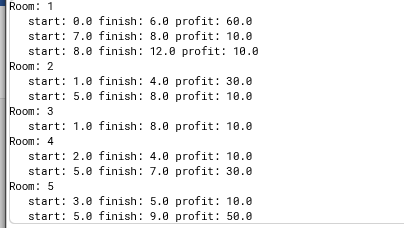








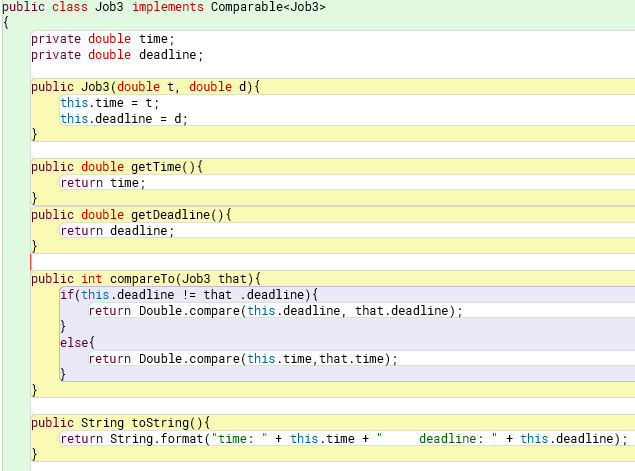
-Kết quả chạy hàm main:



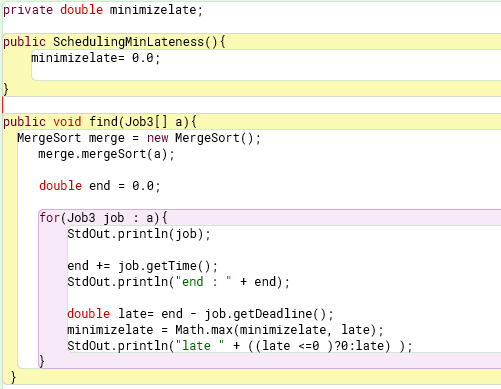
17.Min Lateness(tạo )

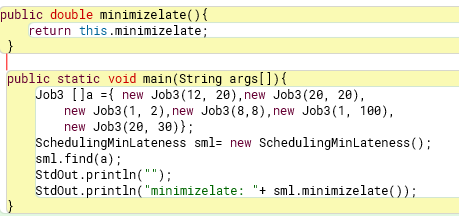
Tìm độ trễ tối đa giữa hai công việc nhỏ nhất.

-Phần code:

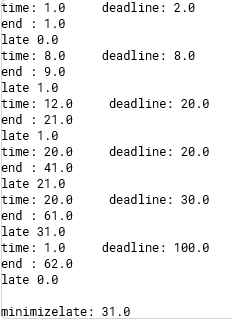








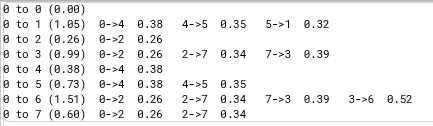
-Kết quả chạy hàm main:



18.Dijktra SP( khôi phục)

Khôi phục phương thức relax().

-kết quả chạy hàm main:



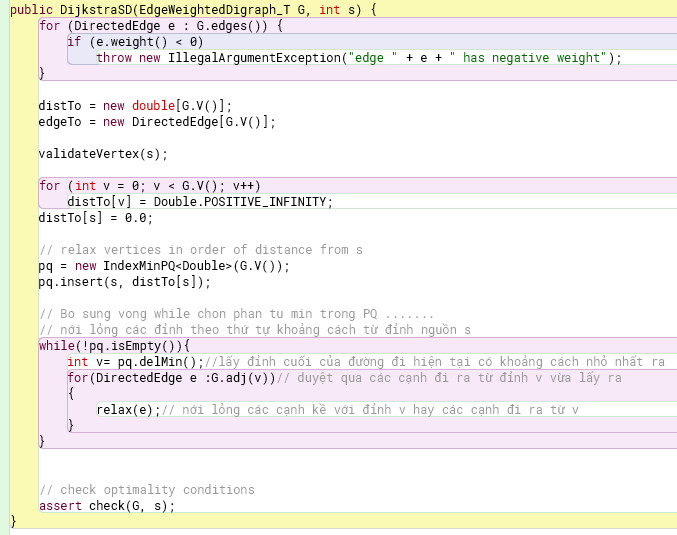
19.Dijktra SD( tạo)

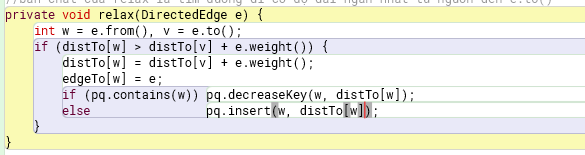
Tìm đường đi ngắn nhất từ mọi đỉnh đến duy nhất một đích.

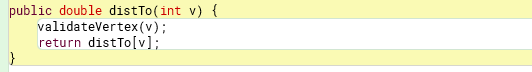
-Phần code:

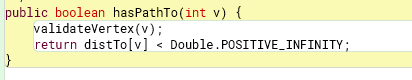


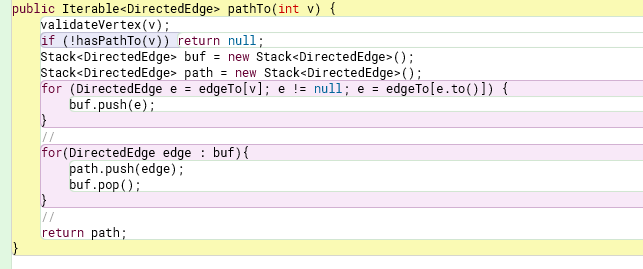




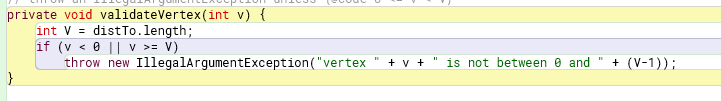


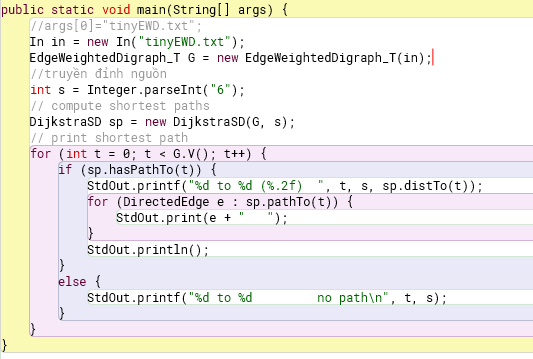




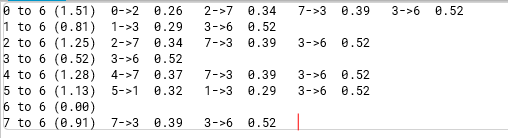








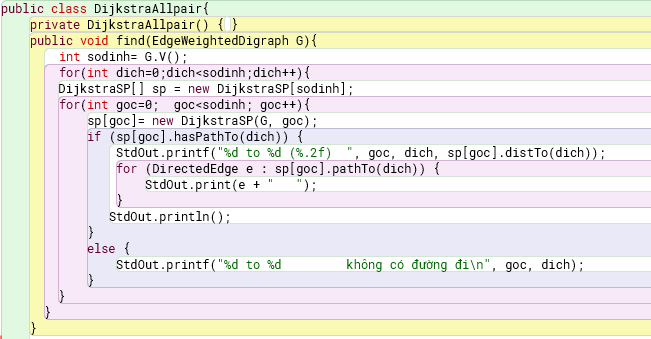
-Kết quả chạy hàm main:

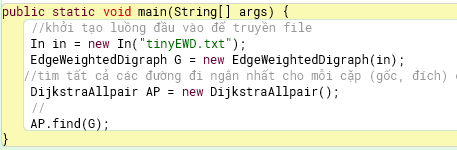


20.Dijktra All pair( tạo)

Tìm đường đi ngắn nhất giữa mỗi cặp đỉnh\_nguồn trên đồ thị có hướng.

-Phần code:

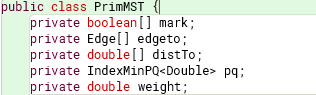


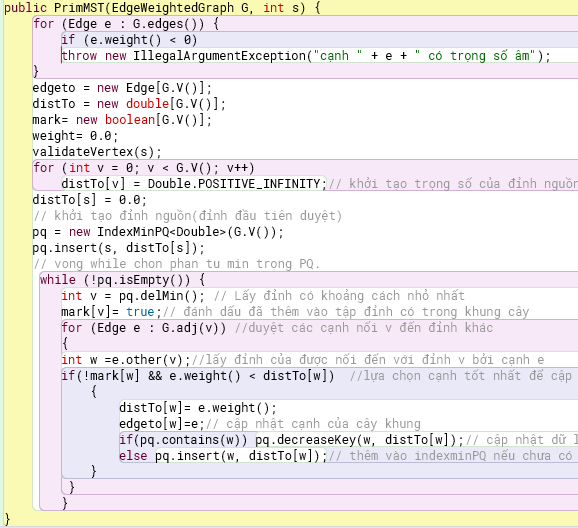


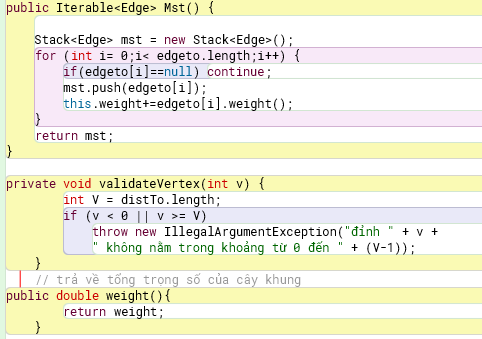
21.PrimMST( tạo )

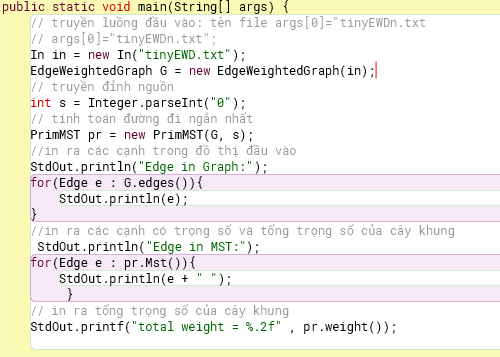
Tìm cây khung có trọng số nhỏ nhất trên đồ thị vô hướng.

-Phần code:

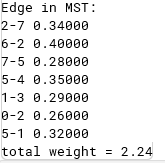








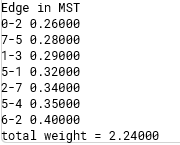
-Kết quả chạy hàm main:



22.KruskalMST( khôi phục)

Khôi phục trong phương thức KruskalMST().

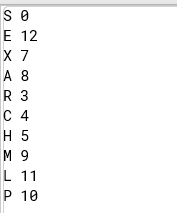
-Kết quả chạy hàm main:



23.Khôi phục BST

Khôi phục trong phưng thức get(), put().

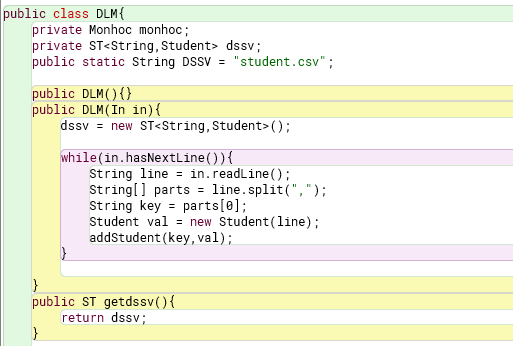
-Kết quả chạy hàm main:



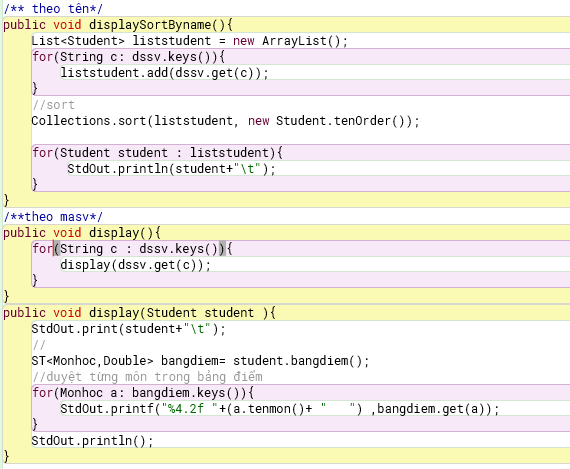
24.DSSV(tạo - Đọc file dssv)

Cài lớp danh sách lớp môn và đọc file (.csv).

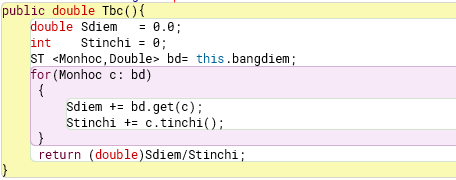
-Phần code:



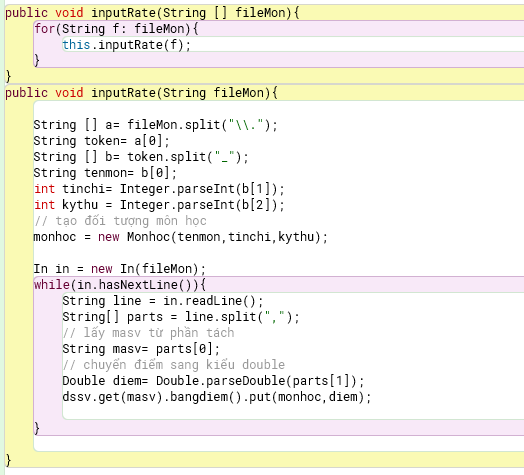
25.In DSSV ra theo mã SV, tên SV



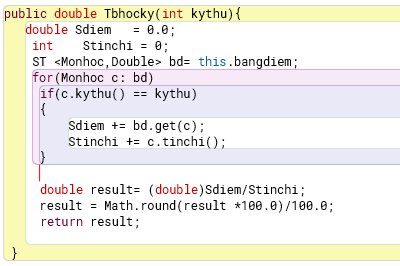
26.Cài phương thức tính điểm trung bình cho lớp Sinh Viên



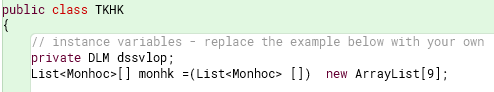
27.Nhập điểm môn

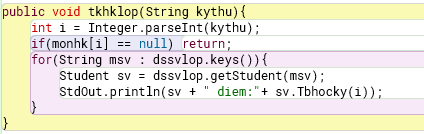


28.Thêm phương thức tính trung bình điểm học kỳ Sinh Viên

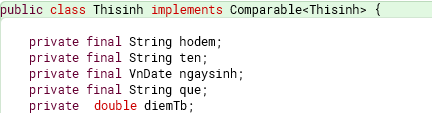


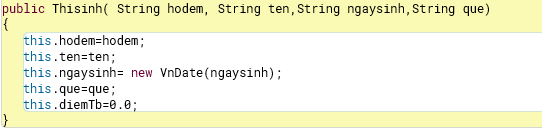
29.Tổng kết học kỳ lớp

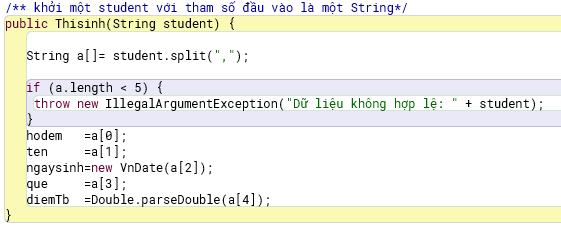


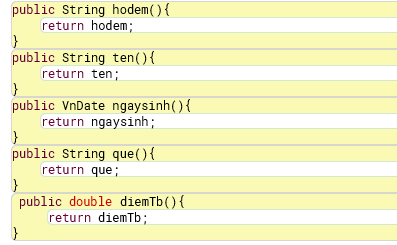


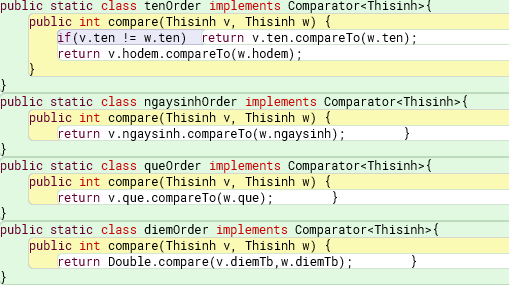
30.Thí sinh,bảng băm

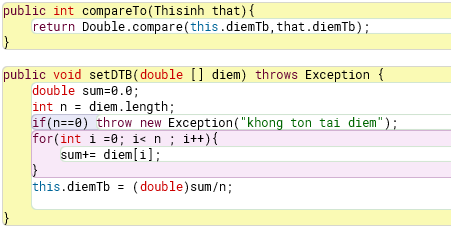


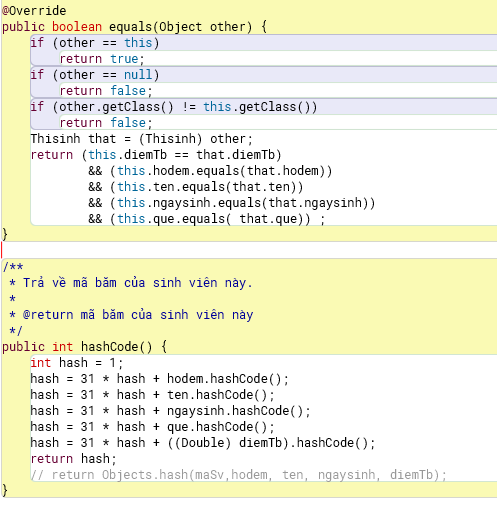




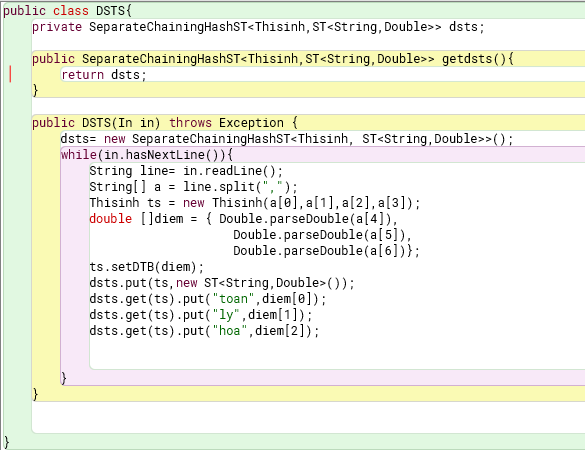








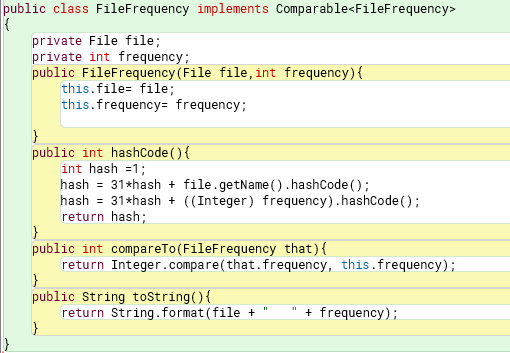
Nhập điểm thi đại học của thí sinh:

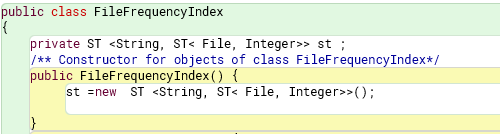


31.File Frequence Index( tạo )

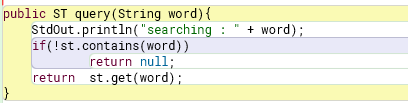
Cài FileFrequencyIndex đưa ra các cặp file\_số lần xuât hiện được sắp xếp.

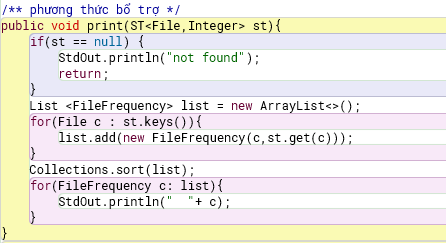
-Phần code:





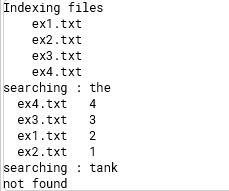






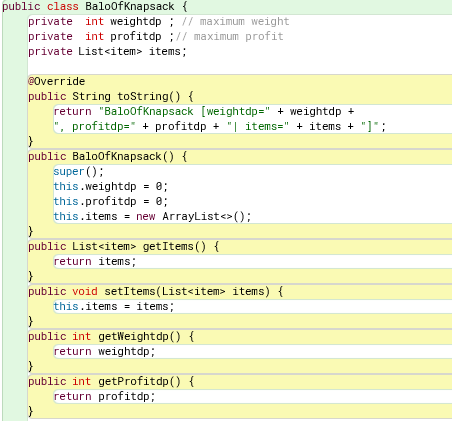


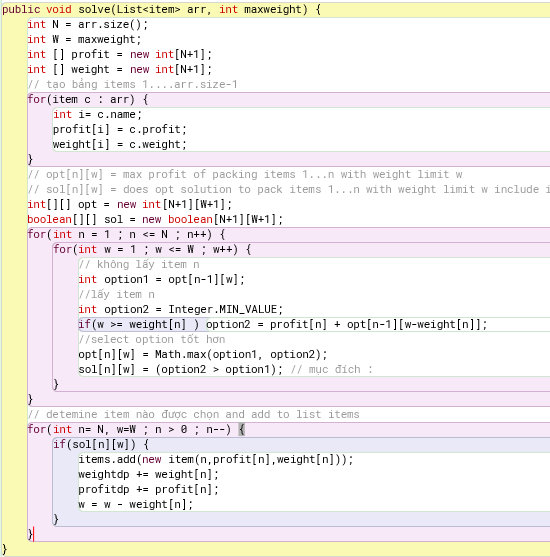
-Kết quả chạy hàm main:

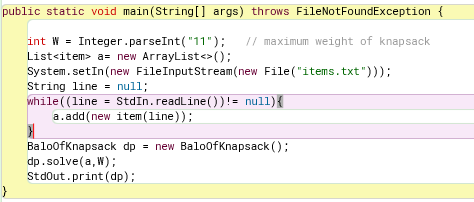


32.Đóng gói Knapsack

-Phần code:







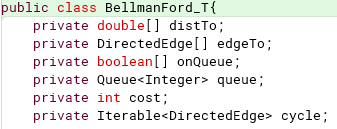
-Kết quả chạy hàm main:

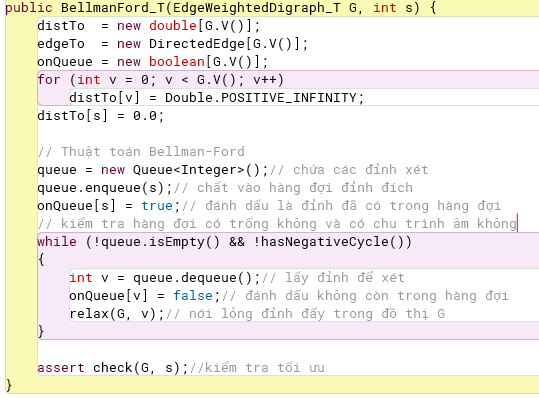


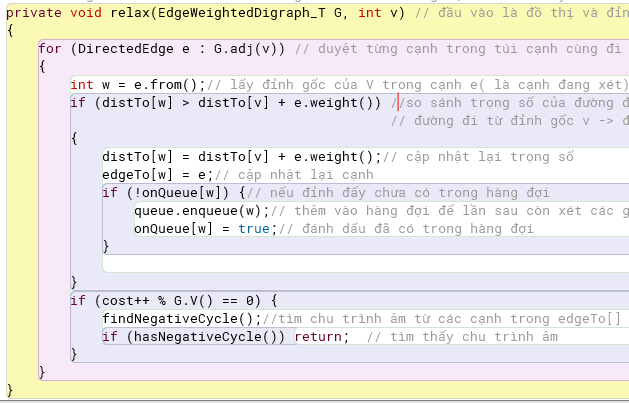
33.Bellmanford\_T

Tìm đường đi ngắn nhất từ mọi đỉnh đến duy nhất một đích trên đồ thị có hướng.

-Phần code:

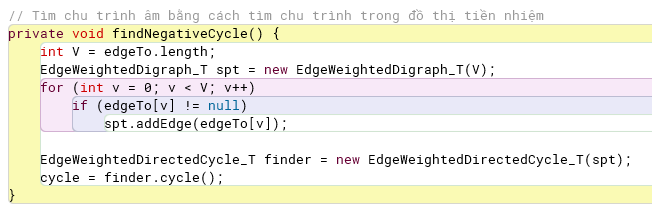


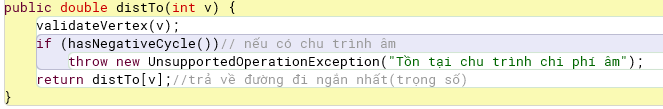


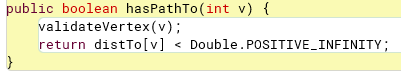


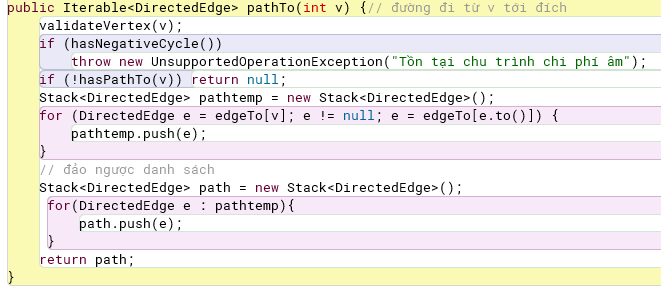


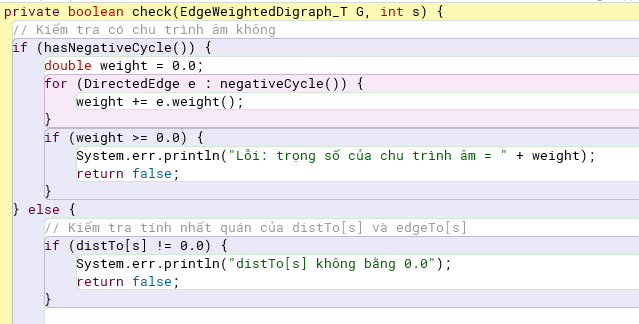


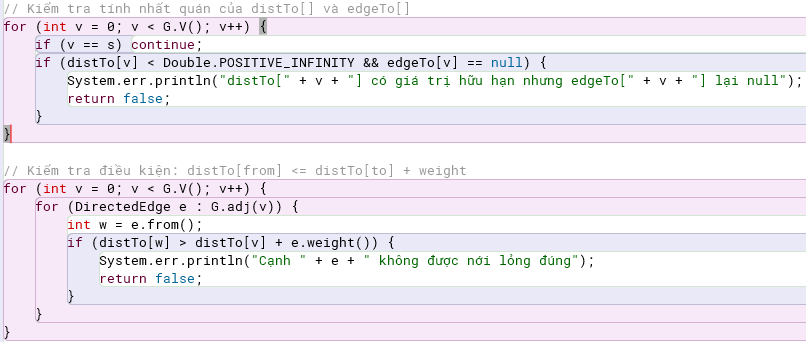


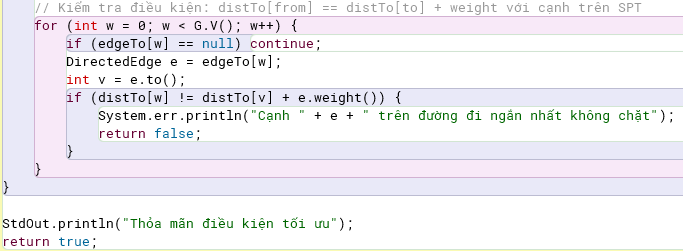


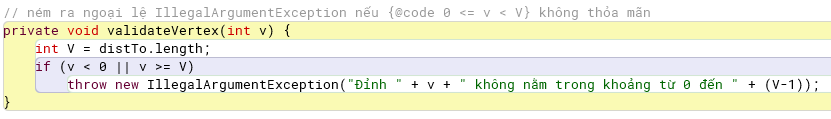


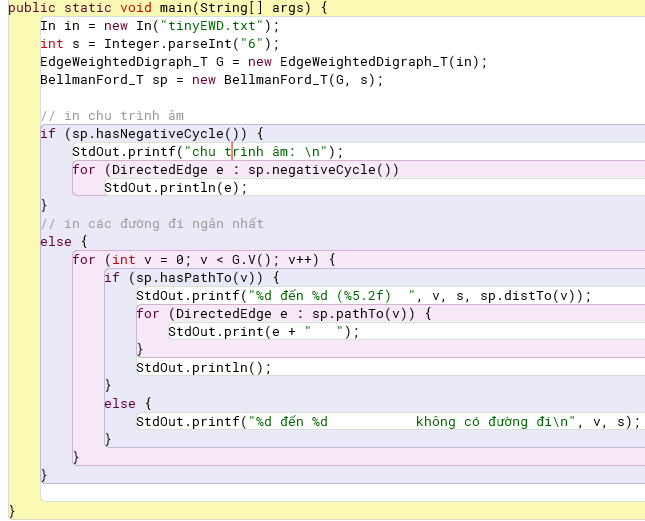




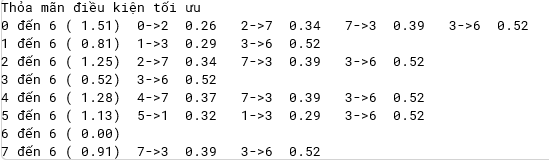








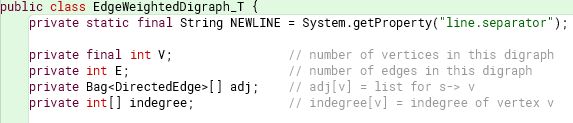
-Kết quả chạy hàm main:

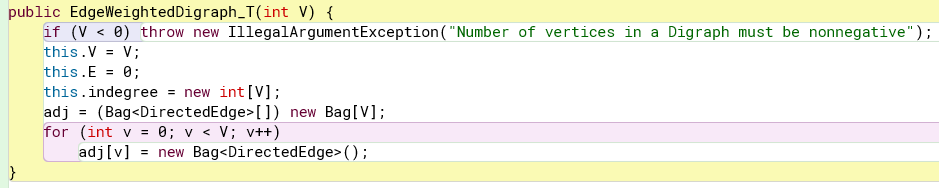


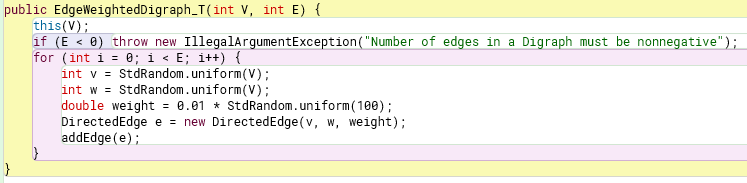
34.EdgeweightDigraph\_T

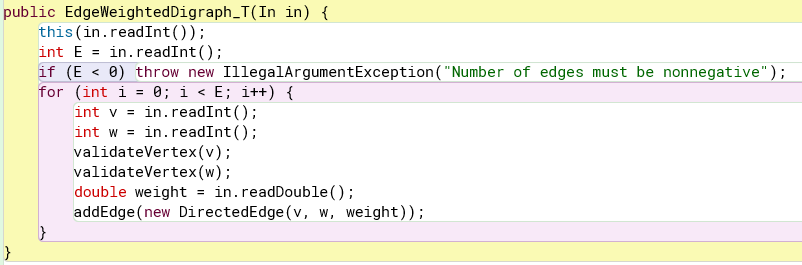
Cài đồ thị với túi cạnh vào một đỉnh.

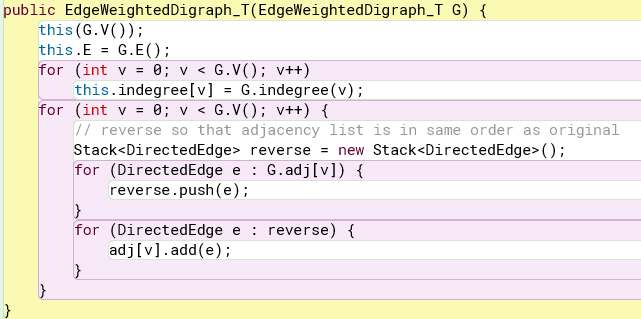
-Phần code:

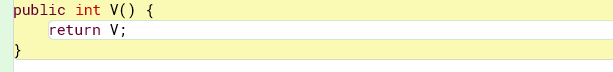




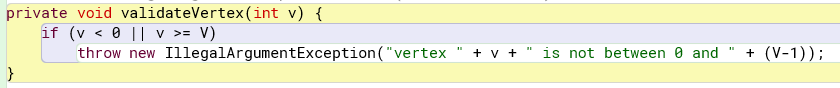


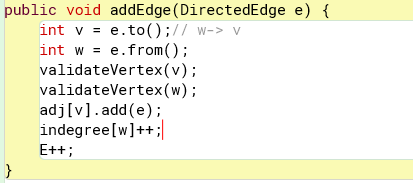


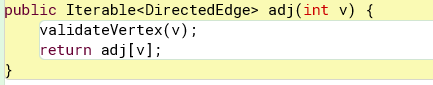


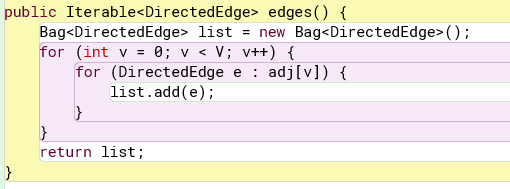


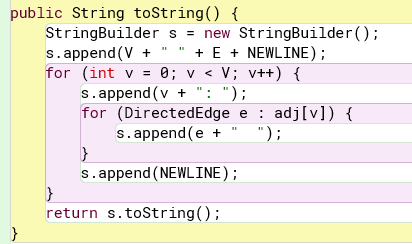








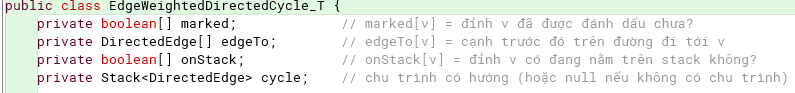


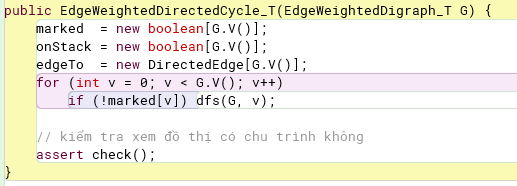


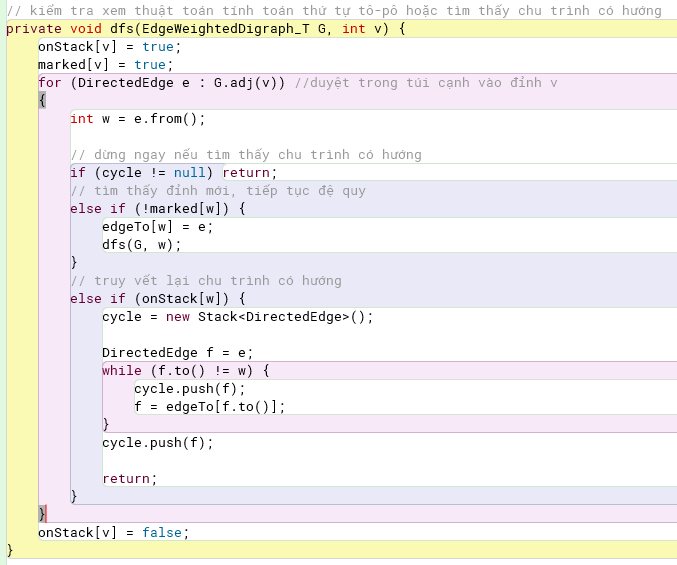
35. EdgeweightDigraphCyrcle\_T

Cài lớp tìm chu trình trên đồ thị có hướng với túi cạnh vào.

-Phần code:

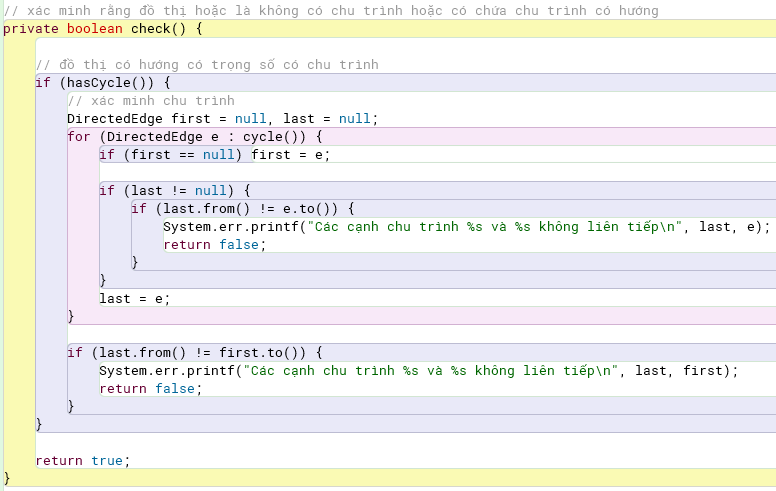


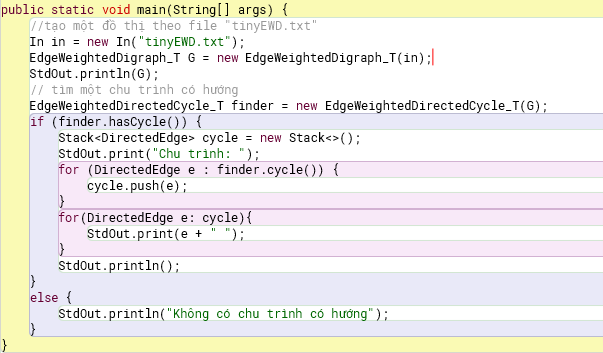




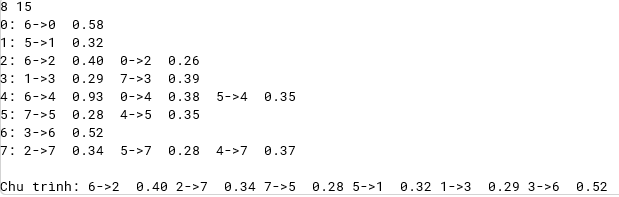








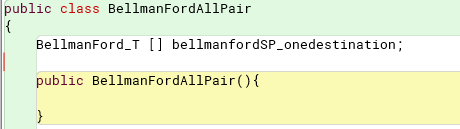
-Kết quả chạy hàm main:

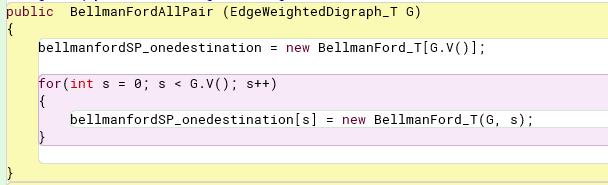


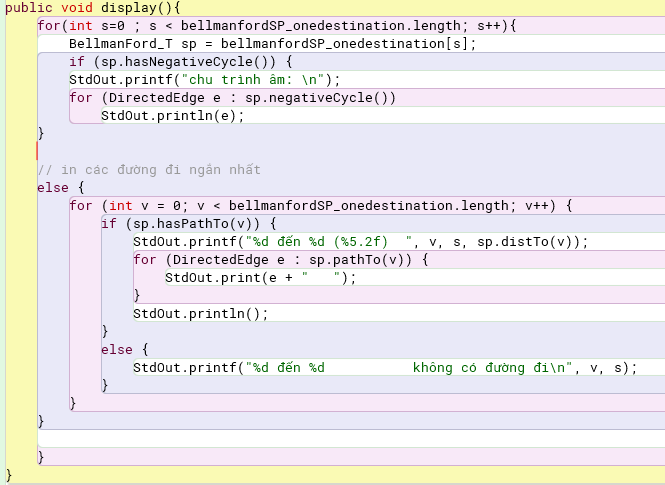
36.BellmanFord all pair

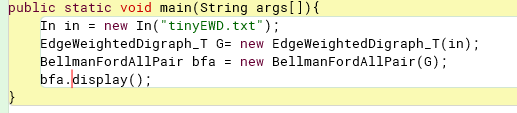
Tìm đường đi ngắn nhất mọi cặp nguồn\_đích trong đồ thị có hướng.

-Phần code:







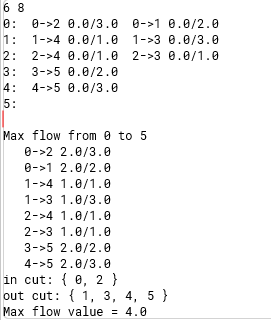


-Kết quả chạy hàm main:

37.FordFullkerson with cut

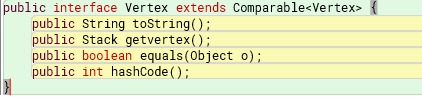
Khôi phục và bổ sung Set\_outCut , Set\_inCut

-Kết quả chạy hàm main:



38.Cài vertex(interface), node, supernode, DirectedEdge\_vertex

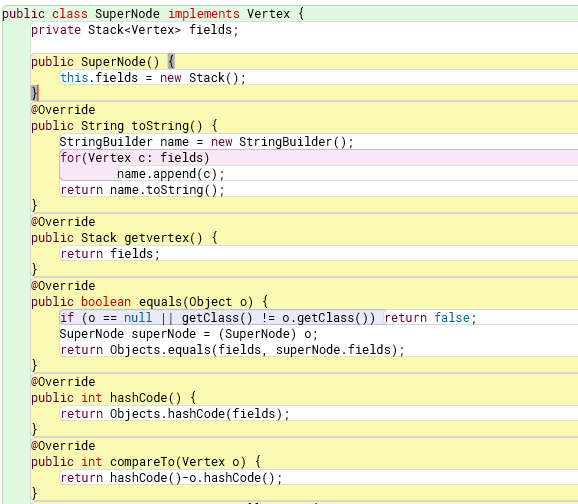
-Vertex(interface):



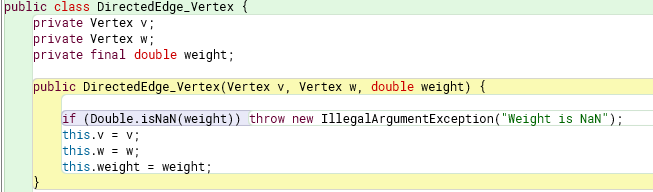
-Node:

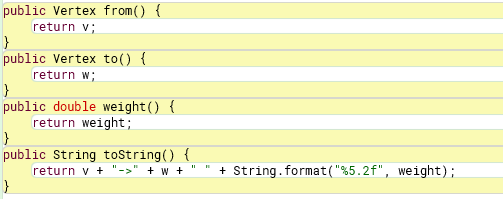


-SuperNode:



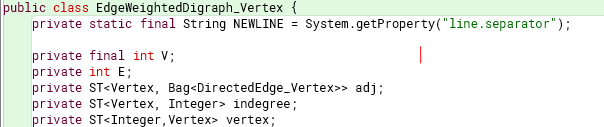
-,DirectedEdge\_vertex:

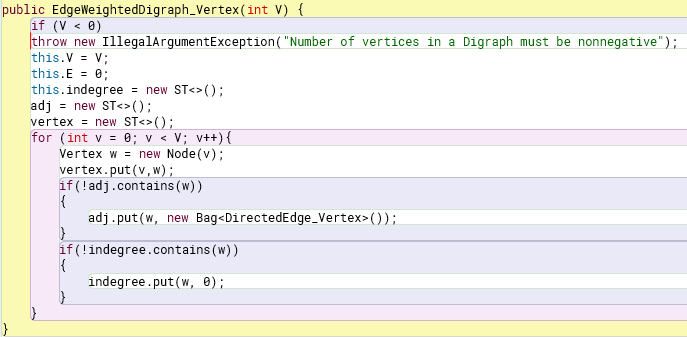


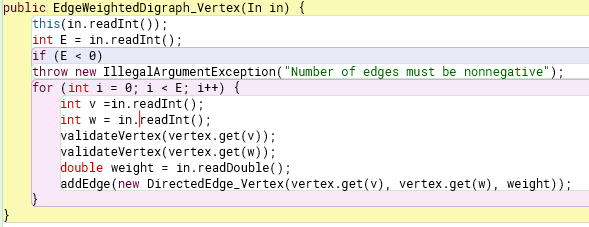


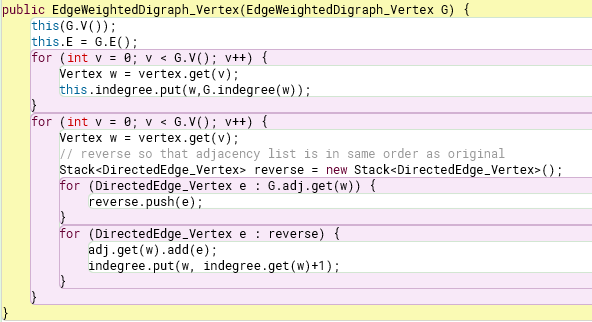
39.Cài EdgeweightedDigraph\_vertex

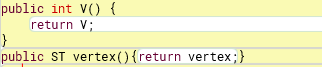
-Phần code:



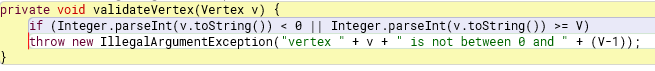


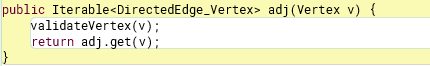


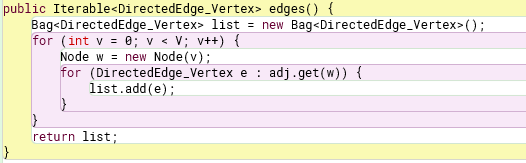
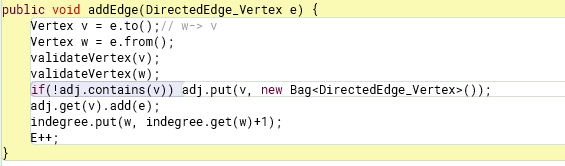


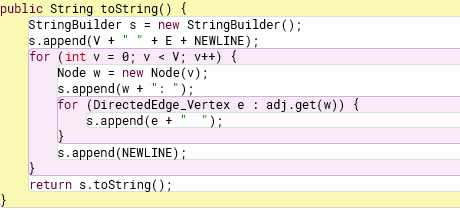


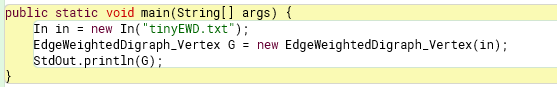




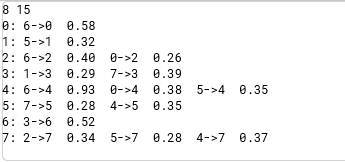






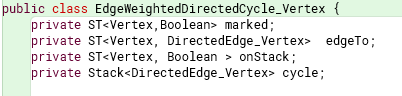


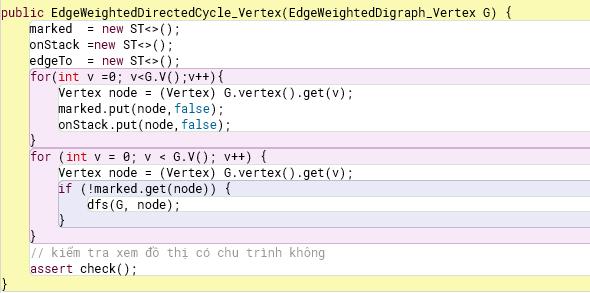
-Kết quả chạy hàm main:

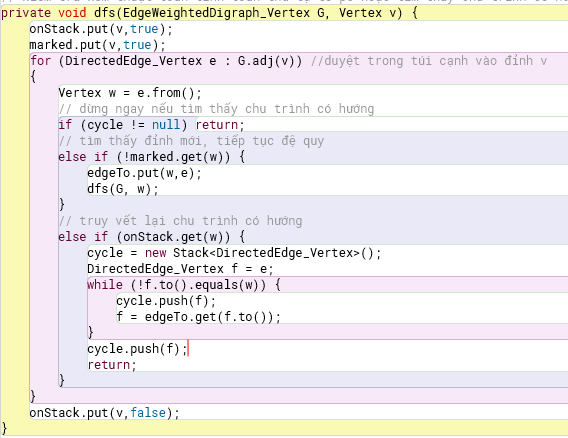


40.Cài EdgeweightedDirectedCycle\_vertex

-Phần code:

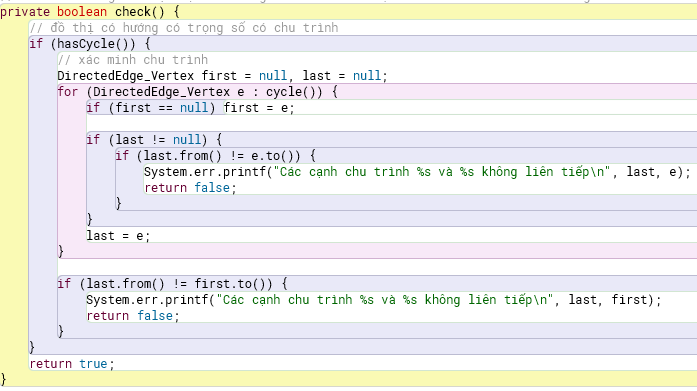


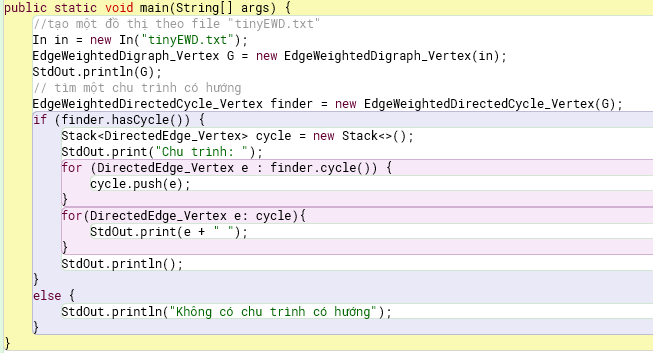




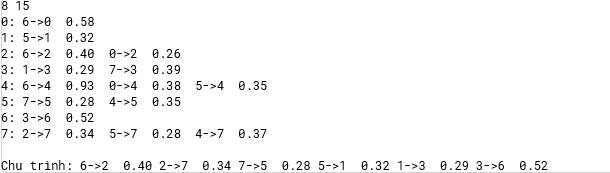




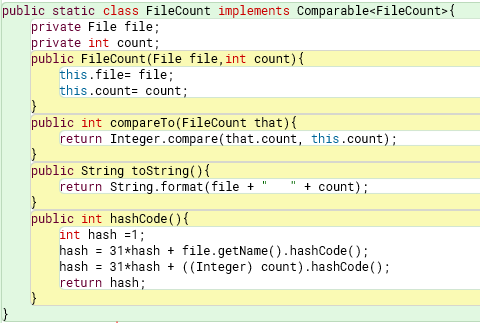




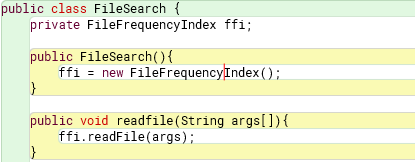
-Kết quả chạy hàm main:

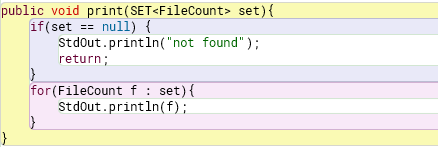


41.Cài lớp FileCount(comparable)

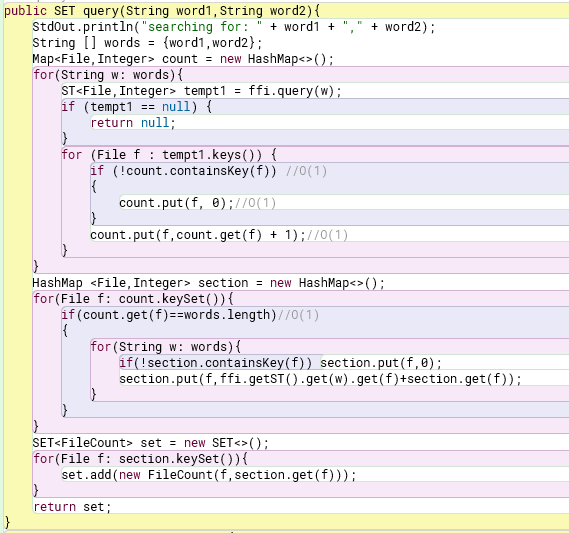


Cài Filesearch

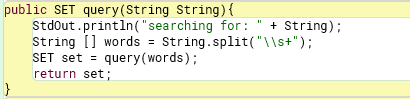


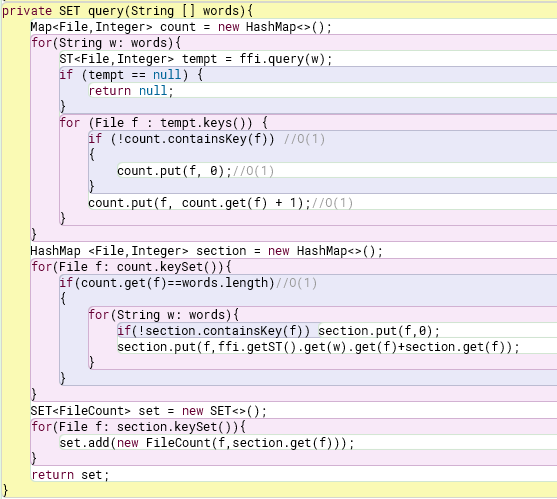


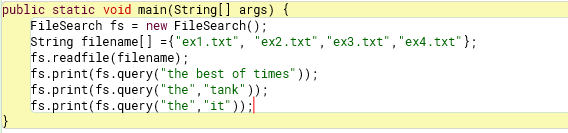
-Query hai từ khoá:



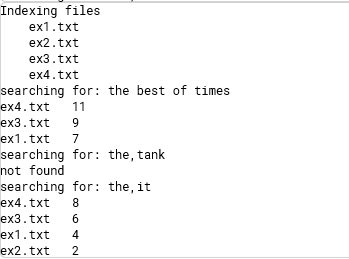
-Query mảng từ khoá:







-Kết quả chạy hàm main:



42.Khôi phục AllSolNQueen

-Kết quả chạy hàm main:

