IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Dominator Coloring Of Graphs

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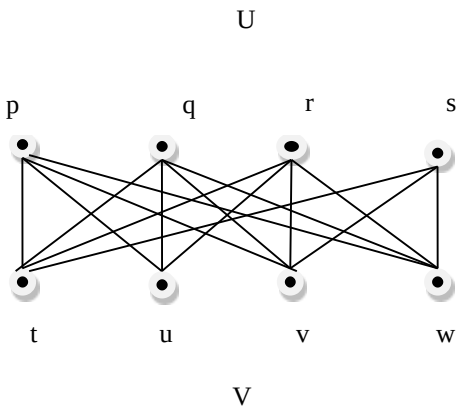
Abstract: In this chapter, we have discussed the dominator colouring of graphs. This paper has real life applications in traffic signal. The partition of signals with respect to the admin control station can be easily assigned by using domination.

I. INTRODUCTION

In the present current world a portion of the more usually known utilizations of diagram hypothesis incorporate organizations. An organization may be an assortment of PC, phones, or related innovation interconnected by media transmission gear used to communicate or get data. Diagram shading and mastery are two areas of chart hypothesis that have various application to the present organizations. The historical backdrop of diagram hypothesis might be explicitly followed to 1735 by Swiss Mathematician Leonhard Euler. Despite the fact that chart shading and mastery are both still relevant to Traffic light.
In this I have been established how dominator coloring is useful by the people for safe journey.

DEFINITIONS
COLOR CLASS:
In the event that G is k-chromatic, we can segment V(G) into K independent subset V_1,V_2, 〖… V〗_k is called color classes.

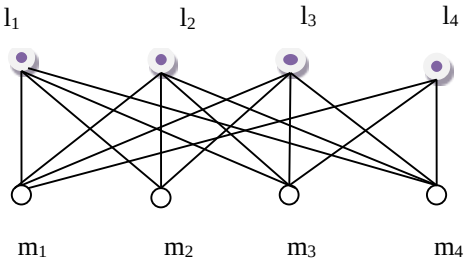


The color classes of $K_{4,4}$ is

{p, q, r, s} =
{t, u, v, w} =

DOMINATING COLORING:

A Dominator shading of G is characterized to be a legitimate shading in which each vertex rules a variety class. There are two cases. By which a vertex ruling a variety class. The vertex is either neighboring all the vertices of one variety class or is the main vertex in its variety class, by which it will overwhelm its own variety class.



Dominator coloring of complete bipartite graph with V=4 and U=4

The color classes of $K_{4,4}$ is

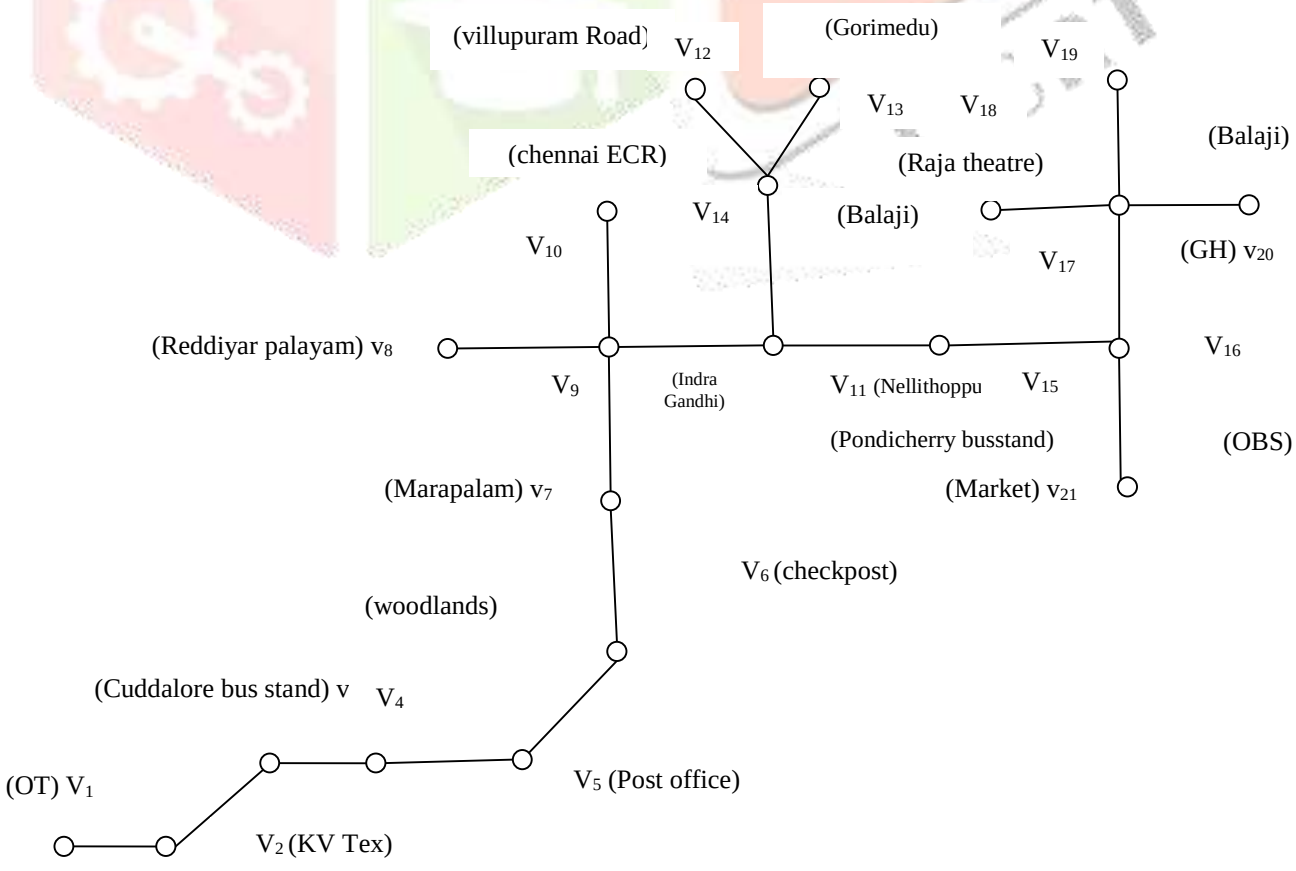
$\{l_1, l_2, l_3, l_4\}$ =

$\{m_1, m_2 m_3, m_4\}$ =

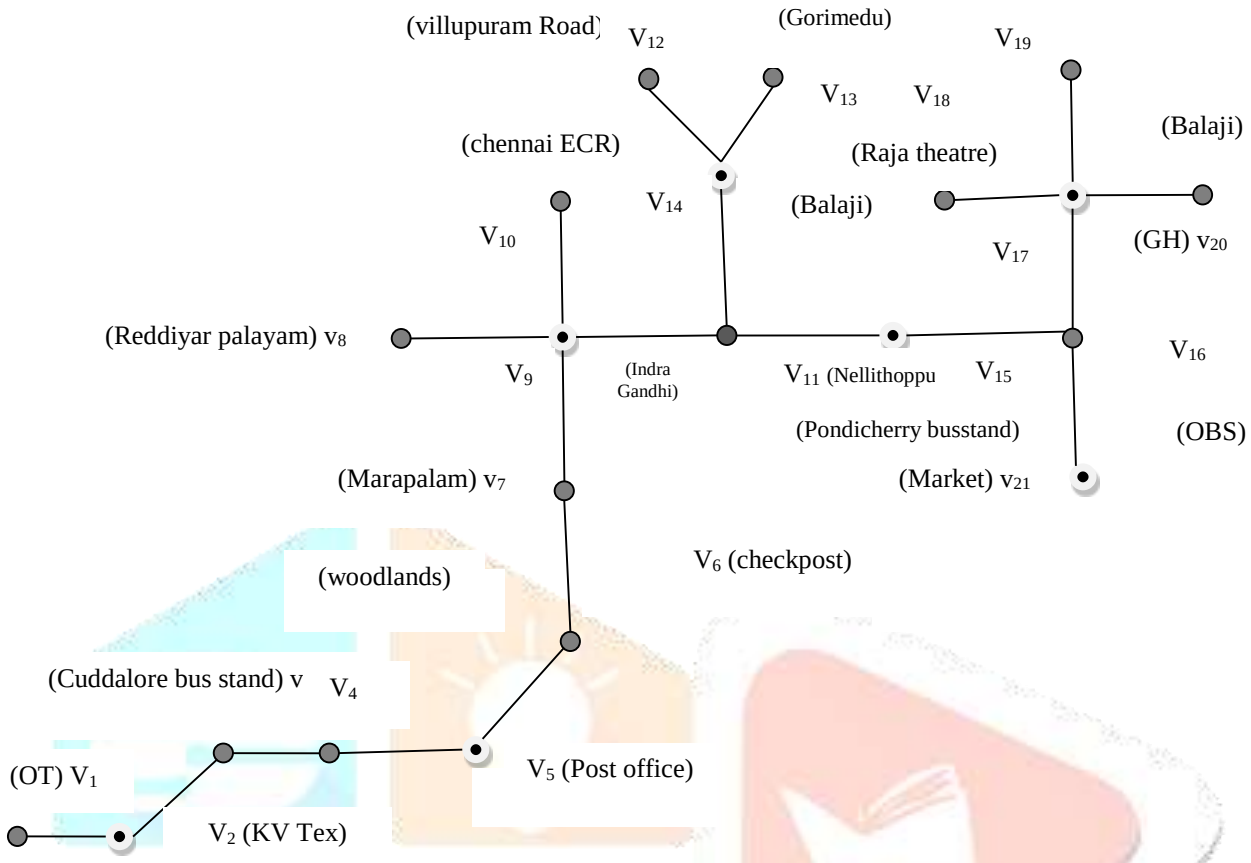
The dominator chromatic number for $K_{4,4}$ is 2

Here each orange vertex is adjacent to at least one violet vertex and is said that each orange vertex is dominated by the violet vertex.

II. TRAFFIC SIGNALS FROM O.T TO PONDICHERRY OLD BUS STAND



III. DOMINATOR COLOURING IN TRAFFIC SIGNALS:

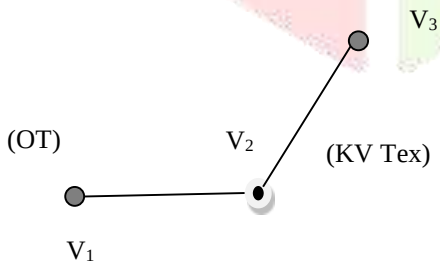


$V_1 = \{ v_2, v_5, v_9, v_{14}, v_{15}, v_{17}, v_{21}\}$

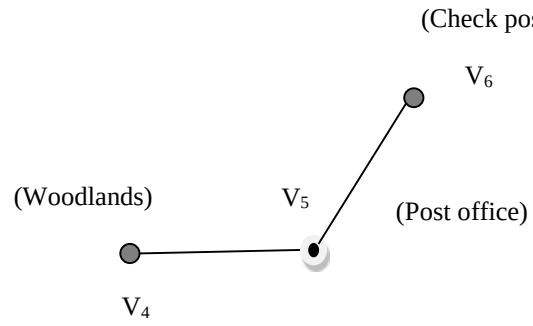
$V_2 = \{ v_1, v_3, v_6, v_8, v_{10}, v_{11}, v_{12}, v_{13}, v_{16}, v_{18}, v_{19}, v_{20}\}$

$V_3 = \{v_4, v_7\}$

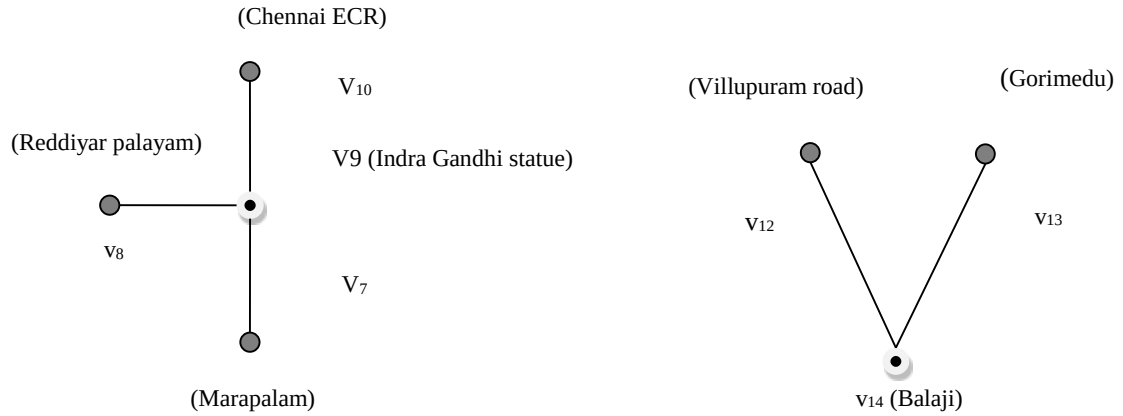
Therefore, The dominator chromatic number have $\aleph_d(G) = 3$



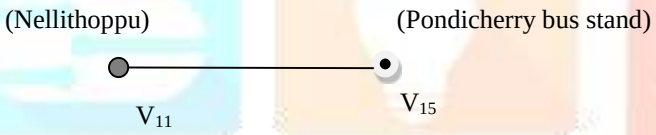
Here, vertices v_1 (OT) and v_3 (cuddalore bus stand) are dominated by the vertex v_2 (KVTex)



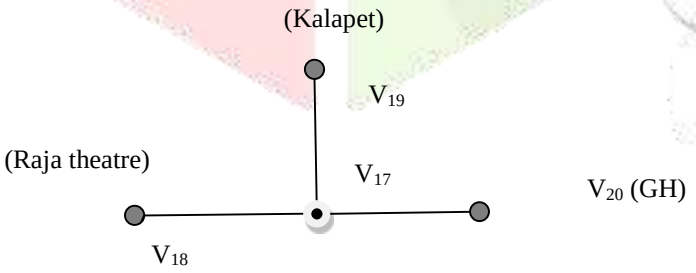
Here, vertices v_4 (woodlands) and v_6 (Check post) are dominated by the vertex v_5 (Post office).



Here , vertices v_7 (Marapalam), v_8 (Reddiyarpalayam) and v_{10} (Chennai ECR) are dominated. Here, vertices v_{12} (Villupuram road) and v_{13} (Gorimedu) are dominated by the vertex by the vertex v_9 (Indra Gandhi Statue)

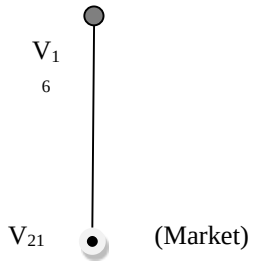


Here, Vertex v_{11} (Nellithoppu) is dominated by the vertex v_{15} (Pondicherry busstand).



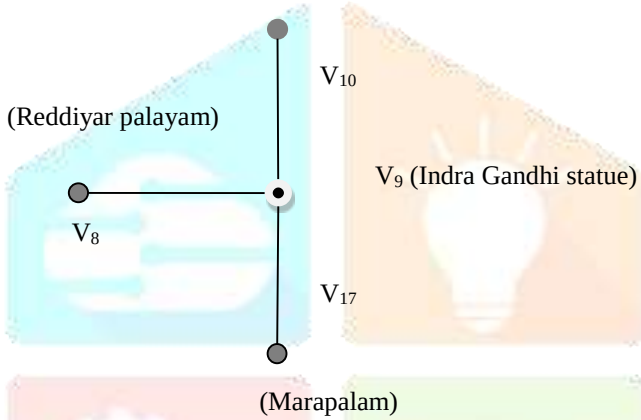
Here, Vertices v_{18} (Raja theater), v_{19} (Kalapet) and v_{20} (GH) are dominated by the vertex v_{17}.

(pondicherry busstand)



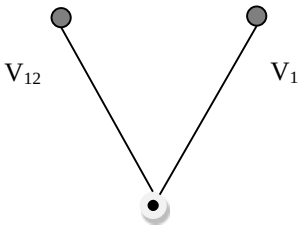
Here, Vertex v_{16} (Pondicherry old bus stand) is dominated by the vertex v_{21} (Market).

(Chennai ECR)



Here, Vertices v_7 (Marapalam), v_8 (Reddiyarpalayam) and v_{10} (Chennai ECR) are dominated by the vertex v_9 (Indra Gandhi Statue).

(Villupuram road) (Gorimedu)



Here, Vertices v_{12} (Villupuram road) and v_{13} (Gorimedu) are dominated by the vertex v_{14} (Balaji).

IV.CONCLUSION

In this dissertation we have discussed some basic definitions of graph, colouring and domination and illustrated with some examples.We additionally presented the Shading of Line charts shaped from the Cartesian result of complete diagram and cycle chart and the connection between chromatic number are examined. Also we introduced new domination parameters such as Disconnected Irregular Dominating set with suitable examples and we have established the relation between Domination number, Complete Mastery Number, Detached Unpredictable Control Number.

Finally an application of Dominator coloring of graphs is defined which plays an important role in many areas, and we are suggesting to use this concept in traffic signal. In the above application, if we fix the admin controller which dominates the signal route, so that it is easy to control the adjacent signals without any delays. Suppose , if we fix the admin signal station, other than the signal which is not domination vertices, then we face the trouble in reaching the signals in correct time. So, we are concluding that, the partition of signals with respect to the admin control station can easily assigned by using domination coloring of the signals.

Hence this work can be extended for further research of some Cartesian product of simple graphs.

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