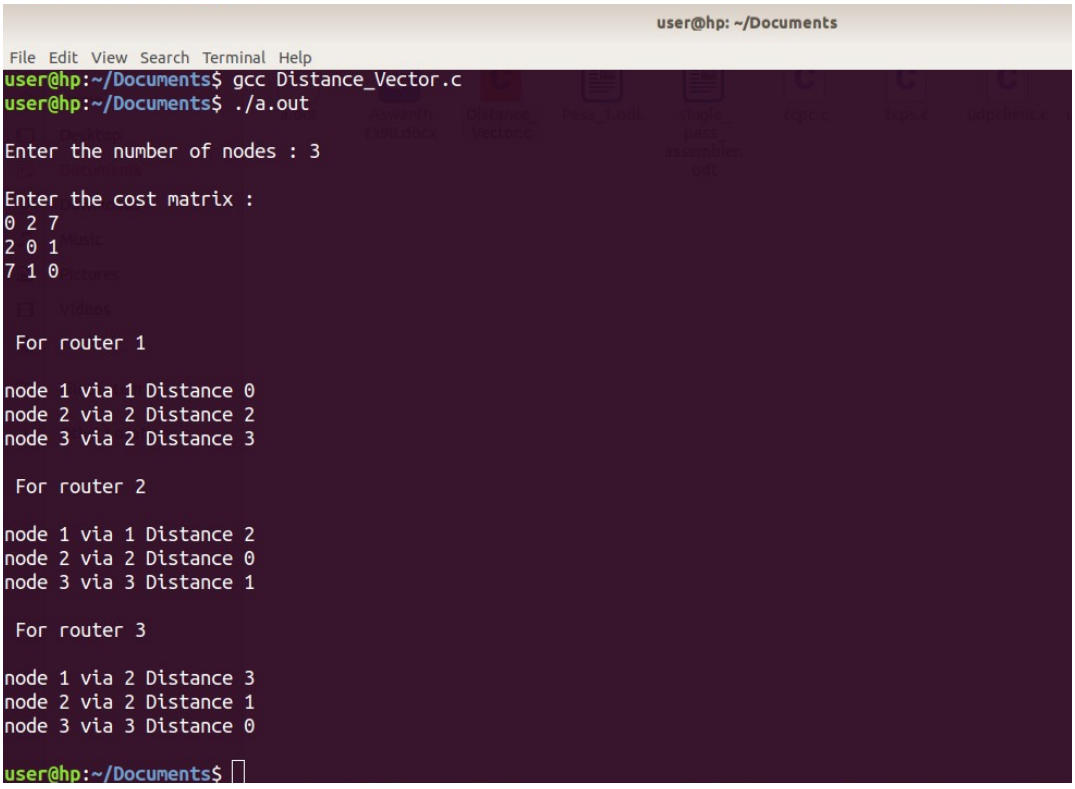
```
//Program for distance Vector Algorithm
#include<stdio.h>
struct node
{
   unsigned dist[20];
   unsigned from[20];
}rt[10];
int main()
{
   int costmat[20][20];
   int nodes,i,j,k,count=0;
   printf("\nEnter the number of nodes : ");
   scanf("%d",&nodes);
   printf("\nEnter the cost matrix :\n");
   for(i=0;i<nodes;i++)
   {
      for(j=0;j<nodes;j++)
      {
         scanf("%d",&costmat[i][j]);
         costmat[i][i]=0;
         rt[i].dist[j]=costmat[i][j];
         rt[i].from[j]=j;
      }
   }
      do
      {
         count=0;
         for(i=0;i<nodes;i++)
                  for(j=0;j<nodes;j++)
                           for(k=0;k<nodes;k++)
                           if(rt[i].dist[j]>costmat[i][k]+rt[k].dist[j])
                                    {
                                    rt[i].dist[j]=rt[i].dist[k]+rt[k].dist[j];
                                    rt[i].from[j]=k;
                                    count++;
                           }
      }while(count!=0);
      for(i=0;i<nodes;i++)
      {
         printf("\n\n For router %d\n",i+1);
         for(j=0;j<nodes;j++)
         {
            printf("\t\nnode %d via %d Distance %d ",j+1,rt[i].from[j]+1,rt[i].dist[j]);
         }
      }
   printf("\n\n");
}
// End of the program
```

OUTPUT


user@hp: ~/Documents
File Edit View Search Terminal Help
user@hp:~/Documents$ gcc Distance_Vector.c
user@hp:~/Documents$ ./a.out
Enter the number of nodes : 3
Enter the cost matrix :
0 2 7
2 0 1
7 1 0
For router 1
node 1 via 1 Distance 0
node 2 via 2 Distance 2
node 3 via 2 Distance 3
For router 2
node 1 via 1 Distance 2
node 2 via 2 Distance 0
node 3 via 3 Distance 1
For router 3
node 1 via 2 Distance 3
node 2 via 2 Distance 1
node 3 via 3 Distance 0
user@hp:~/Documents$