Programmazione e Calcolo Scientifico

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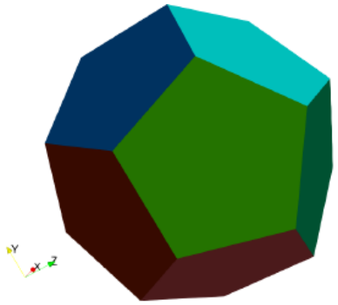
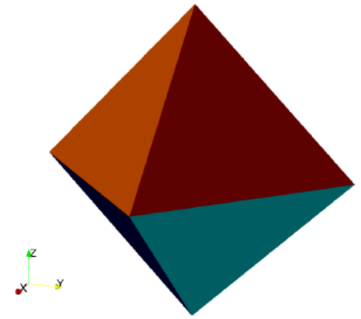
Politecnico di Torino

SOLIDI PLATONICI

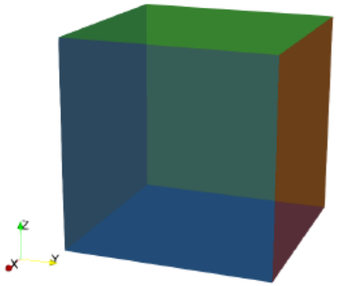




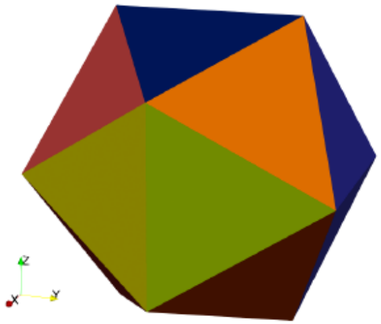
PRESENTAZIONE PROGETTO DI GRUPPO

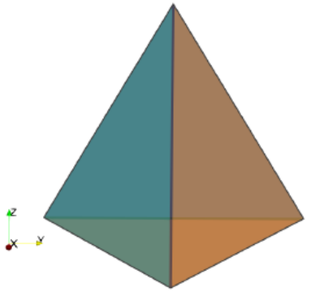
NOEMI LAINÀ S311037

ULDERICO GUZZARDI S307530



Start





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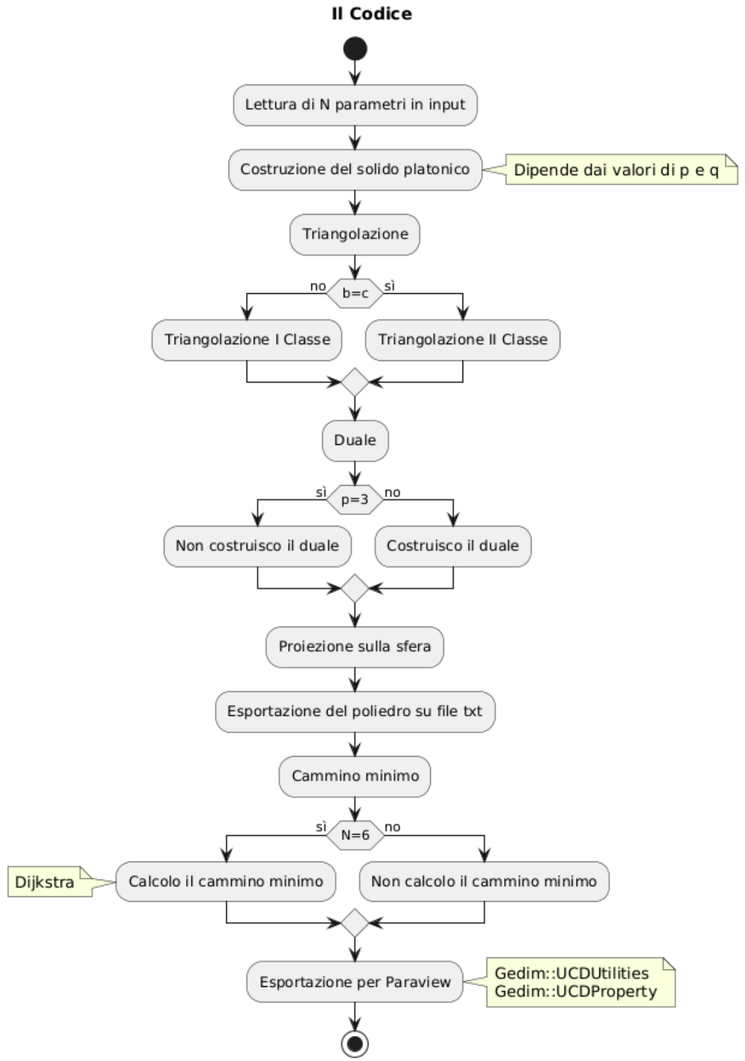

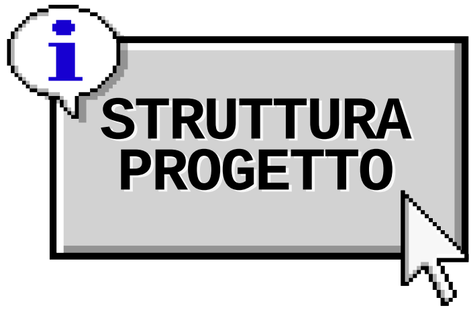

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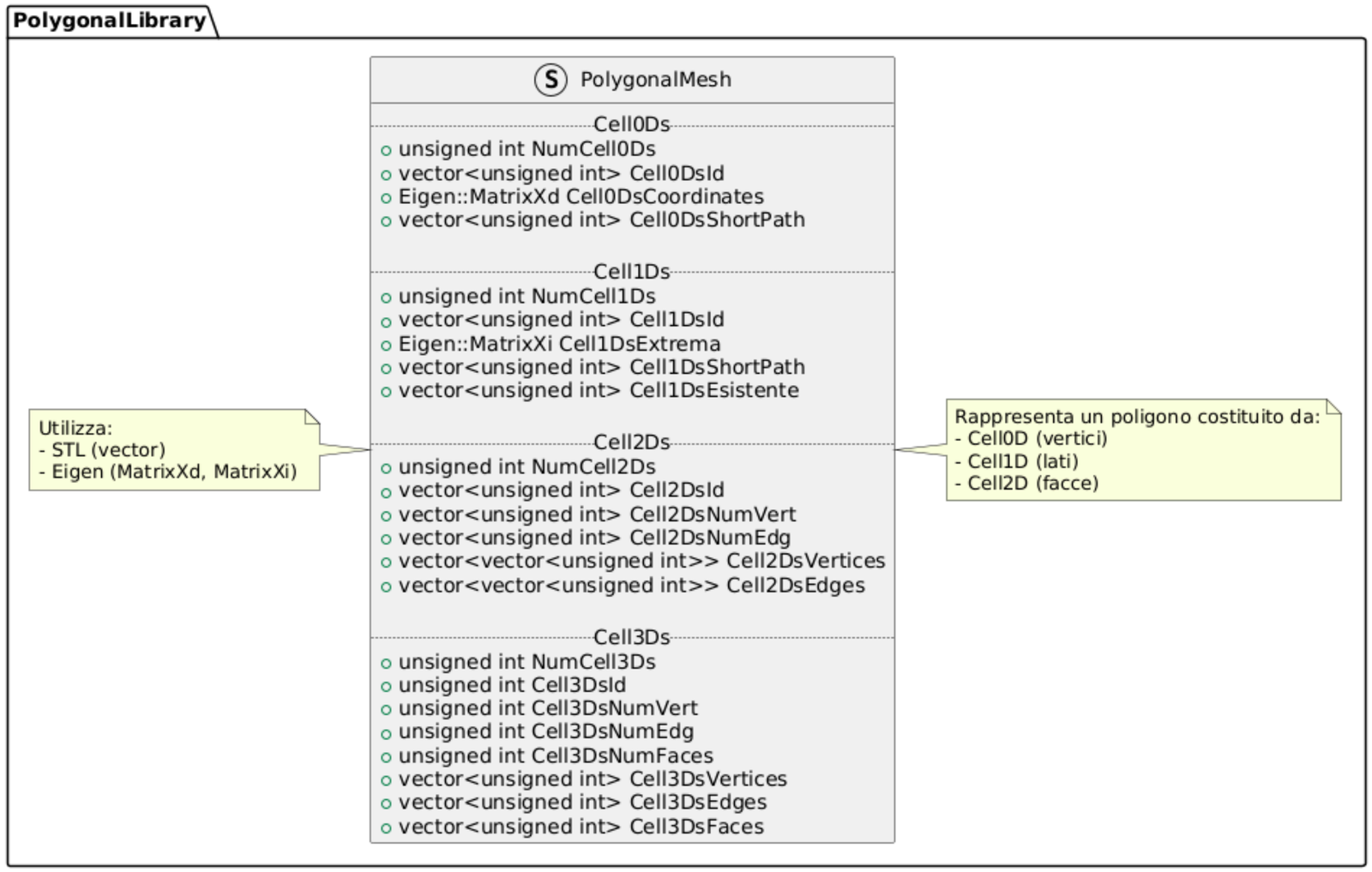
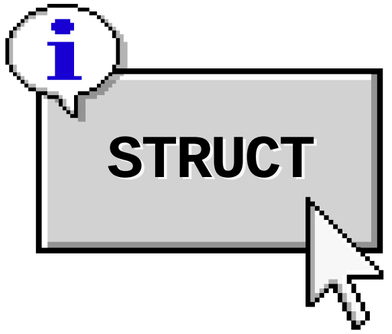
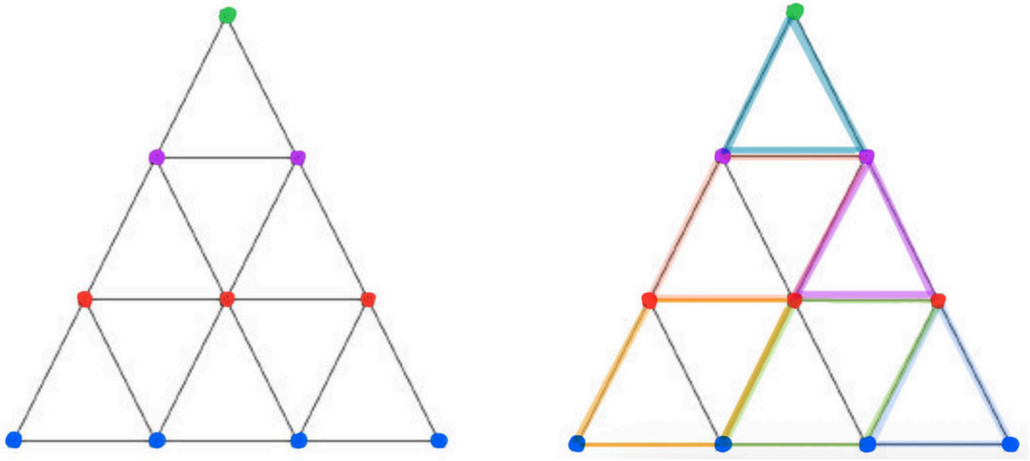
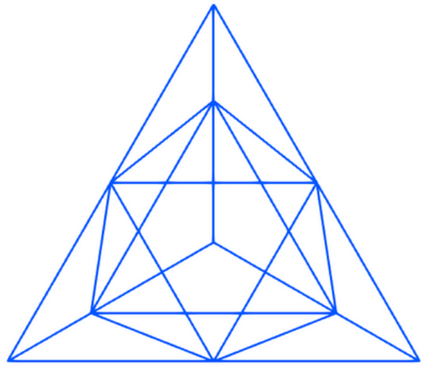


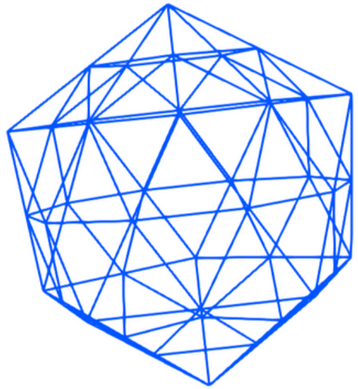


- *vector<vector<unsigned int>> strati_vertici*



Esempio: memorizzazione per strati sui verti, e suddivisione per “parallelogrammi” per le facce triangolari (b=3).





Esempio: Tetraedro ed Icosaedro con triangolazione I classe

3 "CATEGORIE" DI VERTICI:

1. **Vertici della triangolazione di classe 1**

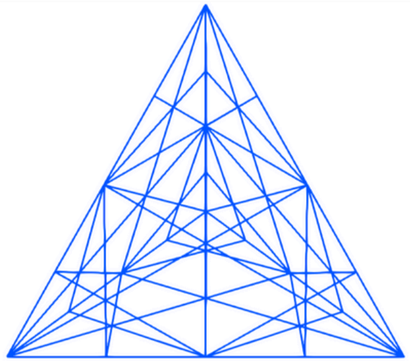
vector<vector<unsigned int>> strati_vertici

2. **Baricentri**

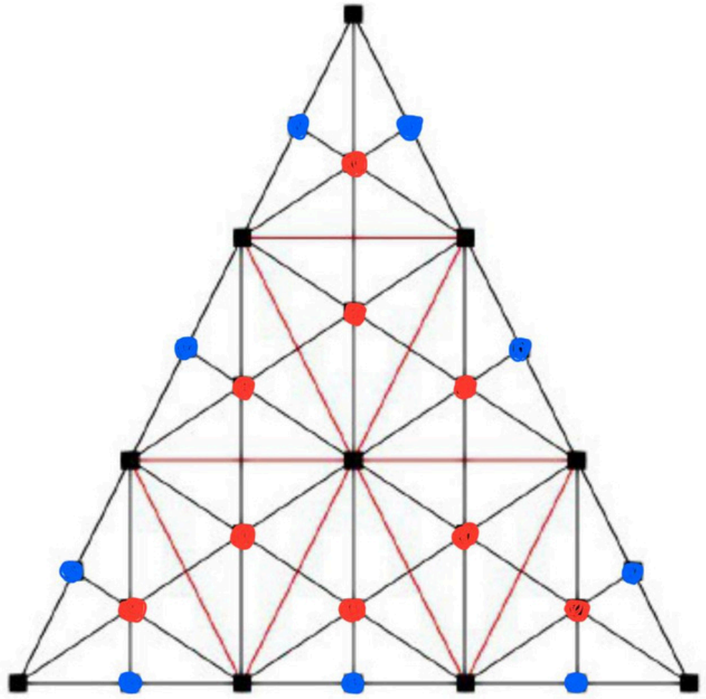
vector<vector<unsigned int>> strati_baricentri

3. **Vertici intermedi**

vector<vector<unsigned int>> strati_intermedi



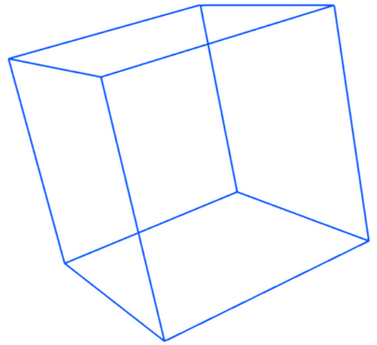
Esempio: tetraedro con triangolazione II classe

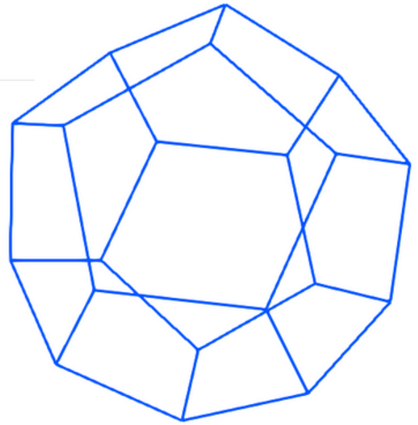


COSTRUZIONE DEL DUALE

- map<vector<unsigned int>, vector<unsigned int>> lati_facce
- map<unsigned int, vector<unsigned int>> vertici_facce
- map<unsigned int, vector<unsigned int>> adiacenti

Poliedro inizale		***Duale***
vertici_poliedro	→	vertici_duale = **facce_poliedro**
num_lati	→	num_lati
facce_poliedro	→	facce_duale = **vertici_poliedro**

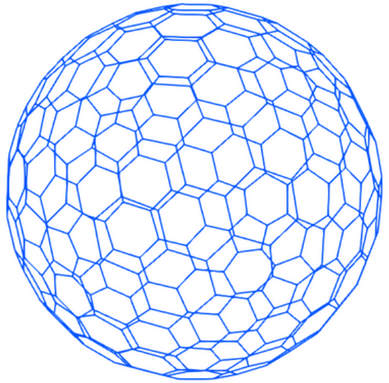




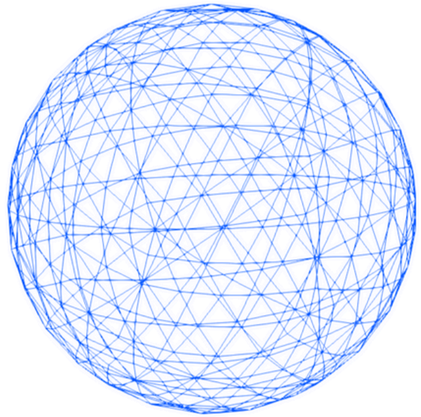
Esempio: cubo e dodecaedro

PROIEZIONE SULLA SFERA

- Eseguita dopo la triangolazione e/o dualizzazione



- cell1Ds_properties[0].Label = "Lati Esistenti";
  cell1Ds_properties[0].UnitLabel = "-";
  cell1Ds_properties[0].NumComponents = 1;



- mesh.Cell0DsCoordinates(j,i)= mesh.Cell0DsCoordinates(j,i)/norma
[j = 0, 1, 2 relative ad asse x, y, z]

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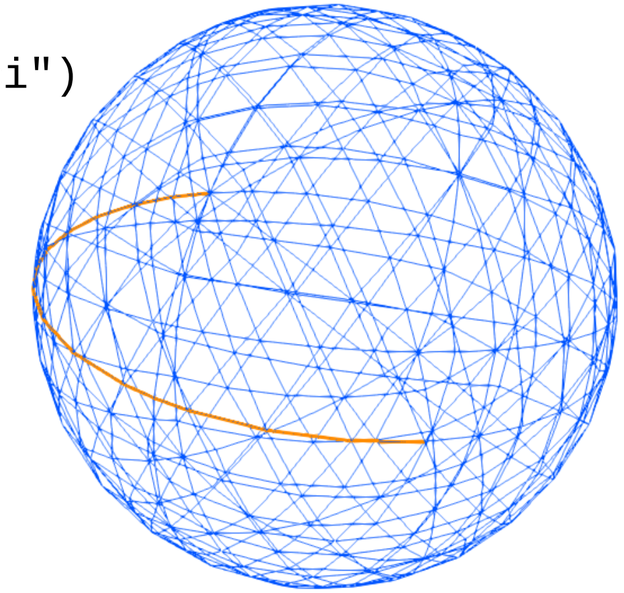
- Algoritmo di Dijkstra

- vector<vector<pair<unsigned int, double>>> LA(N)

- priority_queue<pair<double,unsigned int>, vector<pair<double, unsigned int>>, greater<pair<double, unsigned int>>> pq;

- cell0Ds_properties[0].Label = "ShortPathVertici";("ShortPathVertici")
  cell0Ds_properties[0].UnitLabel = "-";
  cell0Ds_properties[0].NumComponents = 1;



Esempio: cammino minimo su icosaedro proiettato con triangolazione II classe

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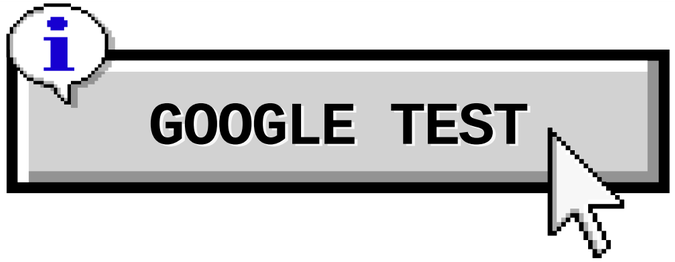

- Costruzione poliedro (5 Test)
- Controllo esistenza e appartenenza vertici/lati (3 Test)
- Triangolazione (5 Test)
- Duale (1 Test)
- Proiezione sulla sfera (1 Test)
- Cammino minimo (1 Test)

GRAZIE PER L’ATTENZIONE.