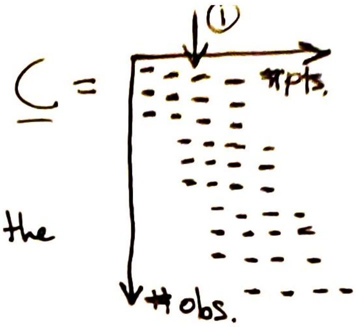
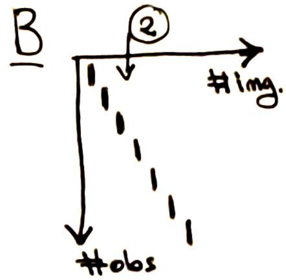
- Properties of matrix C, and B.
  - C consists of 2×3 matrices C_{ij}^T.
- ① The number of non-zero 2×3 matrices per column is the number of times the point has been observed.
  - Only one non zero 2×3 matrix per row, in C.
  - B consists of 2×6 matrices B_{ij}^T.
  - Only one non zero 2×6 matrix per row, in B.
- ② The number of non zero 2×6 matrices per column is the number of images points in the image.
  - C connects 3D points to image points / projection.
  - B connects a image point to camera orientation.





- Sparsed Normal Matrix.

$$N = A^T \Sigma_{ll}^{-1} A = \begin{bmatrix} C^T \\ B^T \end{bmatrix} \Sigma_{ll}^{-1} [C, B] = \begin{bmatrix} C^T \Sigma_{ll}^{-1} C & C^T \Sigma_{ll}^{-1} B \\ B^T \Sigma_{ll}^{-1} C & B^T \Sigma_{ll}^{-1} B \end{bmatrix} = \begin{bmatrix} N_{KK} & N_{Kt} \\ N_{tK} & N_{tt} \end{bmatrix}$$

$$\Sigma_{ll} = \text{diagonal}\left(\underset{2\times 2}{\Sigma_{ij}}\right)$$ block diagonal covariance matrix for the observations.

$$N_{KK} = \sum_{j \in B_i} C_{ij} \Sigma_{ij}^{-1} C_{ij}^T$$ All images in which point i is observed.

$$N_{tt} = \sum_{i \in P_j} B_{ij} \Sigma_{ij}^{-1} B_{ij}^T$$ All points that are observed in image j.