There are many approaches to deal with gradiometric data from GOCE. For example, the full normal equations can be established from the data and then least square method can be used to solve the full normal equations. Now some boundary conditions on the orbit surface can be established according to the invariants of the gradient tensor of the gravity. Therefore, the gravity field can be recovered by using spherical harmonic analysis. Actual GOCE data is dealt with in our work. Firstly, filter arithmetic is introduced for gradiometric data. Then boundary conditions on the orbit surface are established by constructing the invariants from the filtered gradiometric data. Consequently, spherical harmonic coefficients of the gravity field are directly computed by integral instead of solving the full normal equations. Because filter arithmetic can be done in different frequency intervals, different models of the gravity field are obtained. Many analyses and assessments for the accuracies of gradiometric data of GOCE are discussed in term of different models.