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Tehran is a large city with millions of inhabitants. This city is located at the foothills of the Alborz Mountains and is bounded by several active faults. Historical seismicity has been affected several times the area of Tehran which attests the importance of seismic hazard in this region. Numerous active faults have been mapped using tectonic observations but the geometry with depth and the seismicity associated with these faults are not precisely known. Deterministic seismic hazard analysis is a time-independent method useful for providing peak ground accelerations given the maximum earthquake and distance from fault. Results of this method may be considered as conservative and are useful to find about extreme values of the ground motion parameters although it does not provide return period of peak ground acceleration. The concept of surface rupture length was used to determine the maximum magnitude for the faults that were selected and merged from different active fault maps. Then ten different attenuation relationships of strong ground motion were utilized to compute maximum horizontal ground acceleration for Tehran at 2x2km grids. These relations were selected from local, regional and global sets. For each attenuation relation a separate map has been drawn but an average map made by averaging over all ten formulas for each grid was also derived. The final value assigned to each grid was the highest value among the average accelerations. The maps were color coded and an iso-acceleration map was constructed by contouring the acceleration data.