



Design a Residential Complex in the city of Karaj with Iranian-Islamic Architectural Approach

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Abstract: *Today's Iranian housing is taken from western patterns and this form of housing is far from the life of Iranian society. At the moment, Iranian housing and especially its design is based on elements and criteria inspired by Western architecture and concepts, symbols and especially Islamic symbols, which have existed in Iran, have been removed from the architecture of Iranian housing. Since the lifestyle in the Iranian family is different from the West, we can't use all western patterns in the design of the houses. On the other hand, regarding the modernization of life in recent years, it is not possible to construct and use only pattern of historical houses. In this paper, the main principles of the traditional architecture of Iran are explained to interrogate these principles in the formation of a contemporary residential complex in Karaj, Iran. Also a table is provided to show the utilization of the Iranian traditional design concepts in Karaj residential complex. It is believed that such study would increase the awareness of contemporary architecture by providing them some clues on maintaining the traditional values in the current design particularly in the residential sector that would improve the quality of space in contemporary architecture.*

Keywords: *Introversion, Iranian-Islamic Architecture, Karaj Residential Complex, Relationship with Nature, Residential Complex, Transparency and Continuity*

INTRODUCTION

Human activities form a complex environmental system with different aspects that numerous theoretical approaches have studied them in many ways. All these approaches consider the quality of life in the central point of attention, which reveals the need for attention to the capabilities of the human environment. Architecture encompasses human life in all social and individual dimensions and also is accordance with local and biological conditions. With this view, the realization of architecture should not only be considered materially, but also in human spheres (Kashfi et al., 2013).

None of the buildings is more important and diverse than house, since the home is one of the most basic human needs and it is also influenced by the family structure as the smallest unit in the system of society. Having adequate housing is a basic human right and residential spaces must be able to meet both physical and mental needs (Kashfi et al., 2013).

Architecture of houses in each society is considered as one of the components of culture, which naturally should be in harmony with other components. Therefore it can be expected that architecture of houses must be in line with values, beliefs, system of Family, customs and traditions

and other components of culture. For this reason it is possible to get acquainted with culture of a society through form of its buildings and their connection to each other. Obviously, if a change occurs in residential units of a community, we can expect that this change is either in harmony with the other changes in components of the culture or not. Designer of the residential complex should consider cultural feature of the community during the process of design. Of course considering the value of community that comes from religious and people's belief is more important than the other values (Fazeli, 2008).

In Iranian culture, home is a place to showcases traditional religious values and preserve families. Consequently, the concepts of home and family have common language and close meaning to each other. In this culture, the house should have an interior and exterior, so that the foreigner doesn't look at his honor. Iranian home in its traditional sense, based on the size of the interior and exterior, and combination of different spaces has had the capacity to respond to all spatial needs of the family members (Haeri, 2009).

Housing Concept

Home from the economic point of view is a kind of commodity, from the artistic point of view is a kind of symbol, from the sociological point of view is a kind of institution, from the architectural point of view is a kind of building, from anthropological point of view is a kind of culture, and from urbanization point of view is a kind of space (Fazeli, 2008). Understanding the home and its place in the system of social relation of people and society is only possible by taking into account all the symbolic, institutional, material and aesthetic aspect of the home. In the search for definition of the house, it can be said: among all the architectural function, the house is the most important human space, in which the concept of space quality and space ownership for the first time are experienced (Farhadi, 2014).

Throughout the history of house there has always been an inextricable link between the home and the family and home has been a means of providing security and a place for peace. Following the advent of modern technology, industrial revolution, and the massive increase of the population in the twentieth century, major changes were made in needs of people and home's architecture and lifestyle have undergone massive changes. Because of these changes, different and sometimes contradictory definitions of the house are presented (Farhadi, 2014).

Iranian-Islamic Culture and Its Realization in the Architecture of Iran

Because commitment to culture is the spirit of design and the successful environment can be realized with full consideration of social and cultural aspects, the adherence of architects to cultural aspect is an important issue and designer as a grower must strengthens the relations between people (Einifar, 2005).

Considering the viewpoint of Iranian-Islamic culture towards human beings and that the purpose of its creation is worship, the link between human, architecture and the universe of existence is the basis of the recognition of the traditional Iranian-Islamic architecture that practically rules the sacred architecture from the mosque to the design of small and large cities. The architecture of the house in Islam is inspired by the sacred architecture. The house is considered to be a mosque's expansion, and no point in it is empty of God's presence. The origin of Islamic art and architecture and the nature of the forces and principles that created this art are related to the world of Islam itself. Referring to the revelation, it is possible to understand the real needs of the human being and the proper housing for people, since the holy Qur'an has shown him the path to self-knowledge and the promotion of the human soul to human perfection (Rezanejad et al., 2015).

With the acceptance of Islam by the Iranian people the style of construction and exclusively the function of their houses were changed, so that the construction of houses was influenced by the patterns of behavior of the Shi'a and the climatic conditions. For example to adapt to the climate and

preserve the religious values of Islam joints was used between spaces. As the most important of these joints are:

- A. The porch, which was located after the entrance door and was separated from the interior spaces of the house by labyrinth corridor and connected the interior and exterior of home. This space and the labyrinth corridors to interior and exterior courtyards had prevented the appearance of strangers into the sacred space of Family.
- B. The corridor joint, which was generally between the rooms, through which we enter the different spaces such as the guestroom and the interior space.
- C. The courtyard with Iranian golden proportions and its arranged orientation, all year round, create a unique environment in which the people from the house can easily rest and relax (Figure 1) (Memarian et al., 2012).

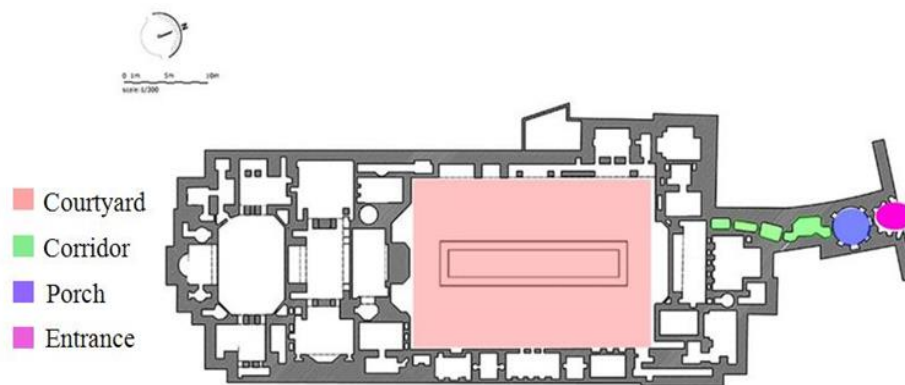


Figure 1: Access joints in Iranian-Islamic architecture.

Fundamental Principles in Organization of Space in Iranian Architecture

Introversion

From the concept of introversion in architecture we can deduce different meanings. This term before entering in to the domain of architecture also include meanings and concepts such as self-control, tendency to internal states and avoidance of ostentation. The discussion of paying attention to inner state instead of appearance has been used by some Islamic architects in the field of architecture. In Iranian-Islamic architecture, because there was only mud on the outside wall of the house, but a world of prolific and beauty inside, we call this architecture as introversive. The characteristic of residential units in Iranian-Islamic societies, in which the family has a particular value is fully compatible with the culture of society and is continued more or less until the new era. In the following, the characteristics of an introversive house are briefly described:

- A. Lack of direct visual communication of the inner space with the outside of the home;
- B. Different spaces are organized by an element such as the courtyard, so that windows and doors open to this space (Figure 2) (Memarian, 2006).

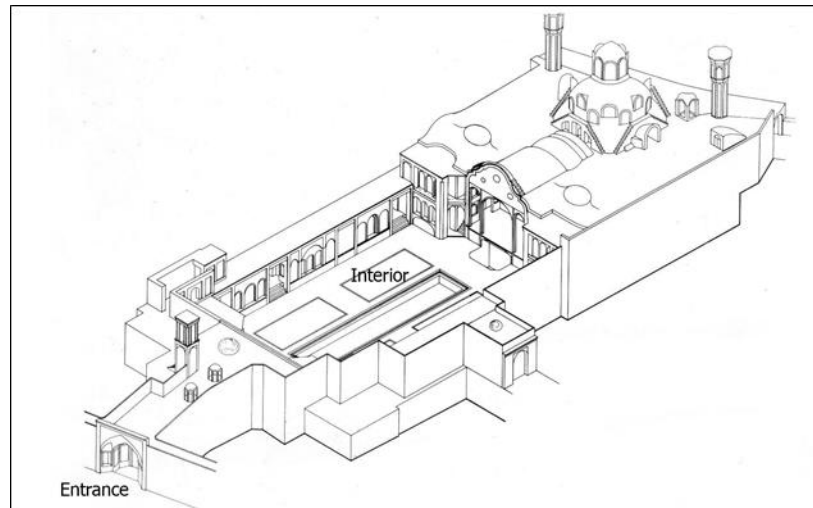


Figure 2: Introversion in Iranian-Islamic architecture.

Introversion is a concept that has existed as a principle in Iranian architecture and can be understood and viewed in a clear presence in Islamic architecture. The undeniable architectural features of buildings such as houses, mosques, schools, caravanserais, and baths are related to its introvert character, which has a deep root in the foundations and socio-philosophical principles of this land. With a simple assessment one can find that in the culture of this society the true value is given to the essence and its inner core and the apparent shell is merely a virtual cover that protects the truth and determines the inner richness of it. The essence is not comparable with external resources and space. Introversion is seeking to preserve an environment in which physical conditions with the support of thought, meditation and worship have reached a balance and transcendental order (Diba, 1999).

Transparency and continuity

The opposite side of the closed space concept is transparency and continuity. In transparent space the movement of human and his view are in continuity; so that the spatial opening in the horizontal and vertical lines brings clarity among Walls and columns and the landscape in the horizon reappear in inner space. In a transparent space a person with the use of perceptual chain and natural sensitivity when confronts with various and disperse elements collects useful information in the final domain of his own receptions and ultimately perceive the hidden message of the space. In Iranian architecture space is never clearly defined and the ambiguity of its complex composition is due to enrich a landscape that can't be interpreted in a finite and comprehensive manner (Diba, 1999).

In understanding the transparency in the Iranian-Islamic buildings important factors are involved. The manifestation of the concept of transparency in Iranian architecture can be classified into surface and spatial transparency, phenomenal transparency, and semantic transparency. Hereinafter, we briefly describe each of them (Sa'adat et al., 2017).

Surface and spatial transparency

In Iranian Islamic architecture due to the climatic and cultural issues transparency of the surface was limited. In general, the openings, except for the limited ones, have small dimensions relative to their adjacent space. Elements such as doors and windows, shabak, fakhr o madin represent transparency on the surface (Sa'adat et al., 2017).

Empty space is one of the most important tools for creating transparency in space. Since transparency is one of the principles of the universe it would be natural if this principle is dominant in the general architecture of the world. Throughout history, the architecture of the world has moved

towards transparency and, in an architectural sense, to reduce material and increase space. However, this trend is more evident in Iran's architecture and Islamic worldview accelerates the movement of architecture to make its space more transparent. A prominent example of such a decrease in material and the opening of space in Iranian architecture were created by domes, porches, central courtyards, and etc. (Mirmiran, 1998).

Phenomenal transparency

In Iranian Islamic architecture phenomenal transparency is interpreted as the concept of layering and spatial ambiguity. In fact, the foundation of Islamic architecture is based on layered design and in many cases the audience is able to recognize and understand its position in space by various spatial situations. Spatial clarity in Iranian architecture is the incorporation of two or more spatial states in one spatial unit. Each spatial state includes several senses and while enjoying spatial independence, has the ability and desire to combine with other spaces (Haeri, 2009). The spatial architecture of Iran is able to offers an experience of intimate, personal and private space alongside the majestic spaces and offers the experience of closed, semi-open and open spaces in combination with each other, in which a person feels that his soul has sheltered or has relaxed. This architecture with its dependence on the continuity of positive space does not cause any disconnection or obstruction in the way of human movement; Man continuously moves in a fluid and open space that remains united forever (Mirmiran, 1998).

Semantic Transparency

Semantic transparency in Islamic architecture is a kind of transparency that changes the mind of the audience which goes back to the mental states of the audience instead of the physical coordinates of the environment. Thus, the holy meaning in the minds of the audience and the user of the building manifests itself as a result of the sense of the audience when it comes to the understanding of space (Sa'adat et al., 2017).

Water, mirror and even tile with glossy surface reflect light and cause silence and a kind of mental relaxation of the audience. In general Iranian architects have created silence and purity in a spiritual environment to create calmness; so that the meaning of the return of man to the inside in order to establish a relationship with the Creator is more expressed in a transparent space (Sa'adat et al., 2017).

Relationship with nature

Respect for nature has deep cultural roots and the peaceful coexistence of man, architecture and nature is fully evident in traditional Iranian architecture. The numerous references in the celestial book about plants and the elements of nature and its paradisiac allegory have caused the presence of nature in the Iranian architecture to be comprehensive. Semi-closed and semi-open spaces in a hierarchical process somehow organize beside each other, as if they always support the motive of respecting and maintaining the divine blessings that manifested itself at the heart of nature and its elements. An excellent example of this kind of architecture is the building of Hasht Behesht. Whenever we pass through its different levels, the nature and a slice of the sky are at our side and the contradictions inside and outside represent the images in which the dignity, calmness and silence of nature lead to worship and imagination in the world. Unlike the four-iwan mosques that the center of the building was occupied with the open space, we see in the Hasht Behesht building a reverse image that moves from a semi-enclosed space to the nature (Diba, 1998).

Case Study: Karaj Residential Complex

Karaj residential complex designed by a contemporary Iranian architect Mehrab Ardiani¹ is located in Karaj, the capital of Alborz Province of Iran. It is three-story build residential complex possessing

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two units in each floor that is designed base on Iranian-Islamic architecture. The following information on this residential complex is based on its architect's explanation and our analysis (Figure 3).



Figure 3: Karaj residential complex.

Design Concept

In karaj residential complex, the pattern of central courtyard of the traditional houses has been used as a design concept. Creating a semi-public space between blocks to increase social interactions of residents, maximum use of north-south light and the use of desirable wind are reasons that are effective in choosing central courtyard as a design concept in this project (Figure 4-5).

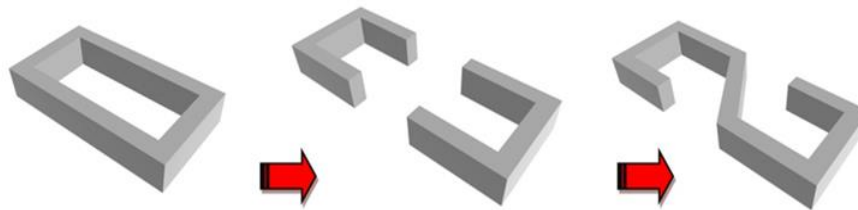


Figure 4: Concept of design.



Figure 5: Courtyard in Karaj residential complex.

Form and layout of blocks

A rectangular shape has been used to form the shape of the blocks. The proportion of length to width in blocks is approximately 1.6 which points to the golden proportion in architecture. The layout of blocks in this site is influenced by several factors such as:

- A. Maximum use of north and south light;
- B. Using North-South desirable winds and decreasing the area of contact with the dominant wind;
- C. Creating a space called "central courtyard" between blocks;
- D. The rectangular shape of the site (Figure 6).

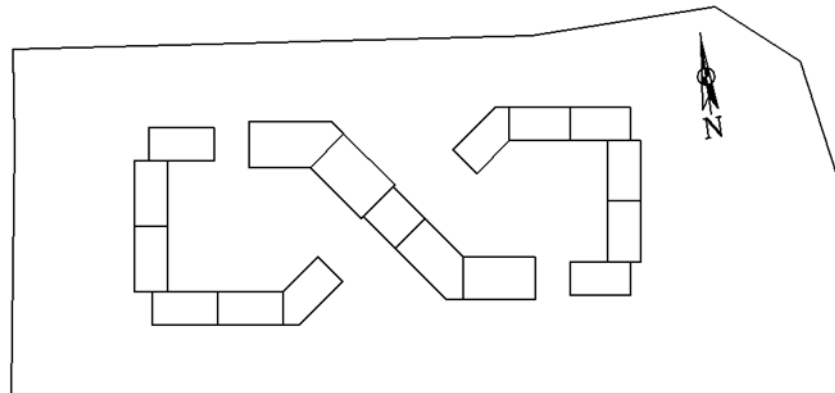


Figure 6: Blocks layout.

Design ideas

According to the explanations above on the main features of the traditional Iranian houses and introducing Karaj residential complex as the contemporary example, table 1 has been provided to illustrate the utilization of the traditional design concepts in the Karaj residential complex. The Design ideas that are presented in Table 1 are based on the Iranian-Islamic approach. In this table, the necessities, designing solutions and the religious values are presented.

Table 1: Iranian –Islamic design approach in Karaj residential complex

Religious values	Necessities	Designing solution
Hijab	<ol style="list-style-type: none"> 1) Maintaining privacy 2) The distinction of realms 	<ol style="list-style-type: none"> A) The lack of direct view of the residential units through each other by appropriate design of the opening shapes, dimensions and their location. B) The lack of direct view from entrance in to the interior space. C) Separating the private and public arenas from each other and reducing the direct view of these arenas to each other. D) Indirect entry to private areas and increased confidentiality through the design of porch and appropriate corridors. E) Considering the hierarchy of space in access to private and public spaces. F) Independent access of private and public arenas to service spaces such as kitchens to reduce interference between realms. G) Separating the private domains of family members (parents and children) in the right way.

Cleanliness and purity	1) Relationship with nature 2) Use of symbolic elements of Islamic culture	A) Relationship with the environment and outside nature by the means of courtyards and private balconies in the floors. B) The presence of adequate light and air in the interior space. D) Use the water element as the symbol of purity in the design of the site.
Contentment	Energy and space optimization	A) Correct layout of buildings in the site and the optimal use of light and desire wind to reduce energy consumption in the building. B) Use multi-function spaces C) Consistency of the form of the building with the region's climate.

Religious values	Necessities	Designing solutions
Cooperation	Improve social interactions	A) Designing the central courtyards in order to enhancing communication between neighbors.
Humility	Respect for man	A) Observe the human scale and avoid high height. B) Consistency of the building with the environment.

Plans

Karaj residential complex's plans are designed according to Iranian-Islamic architecture. In this project the designer created two semi-private courtyards that encourage social relationship among residents. Almost all of the windows are open to these courtyards that mention the principle of introversion in Islamic architecture.

In some blocks, the designer deliberately created a number of jagged edges which increase the use of north-south light and decrease eastern-western light. In the center of each courtyard there is a spacious pergola that residents can meet each other in their free time (Figure 7).

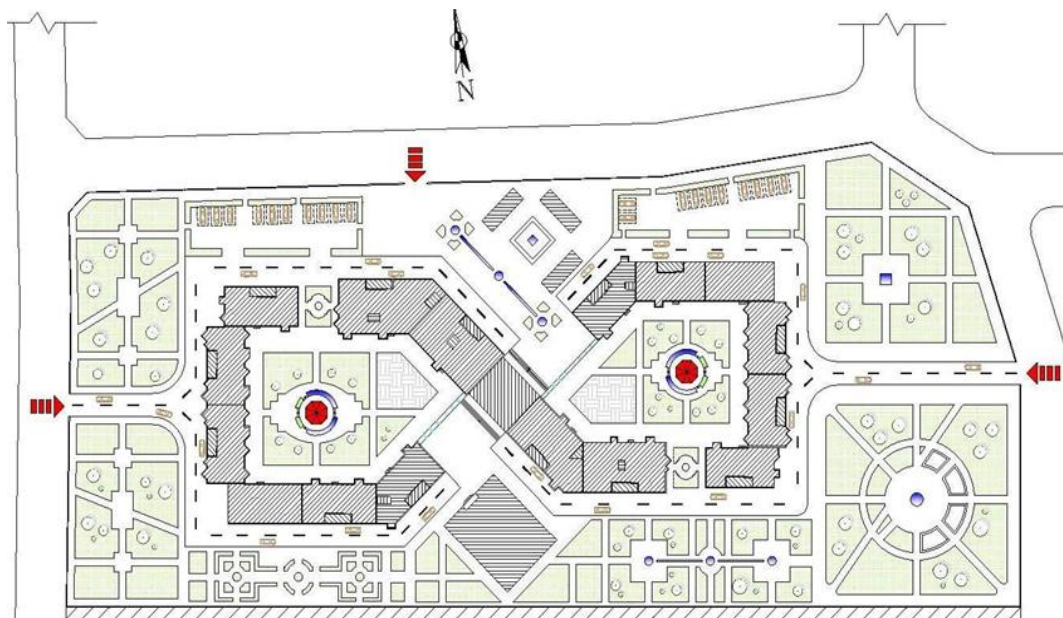


Figure 7: Site plan of Karaj residential complex

In designing the interior space of the units, designer created two distinct realms called private and public zones. Access to these two realms is through small porches and corridors, which create a kind of hierarchy in the access of spaces to each other. Access to the kitchen from private and public areas is independent, which reduce the interference of spatial arenas. Parent's room and children's rooms are separated from each other by a kind of buffer spaces like porches, which reduce the interference among private spaces (Figure 8-10).

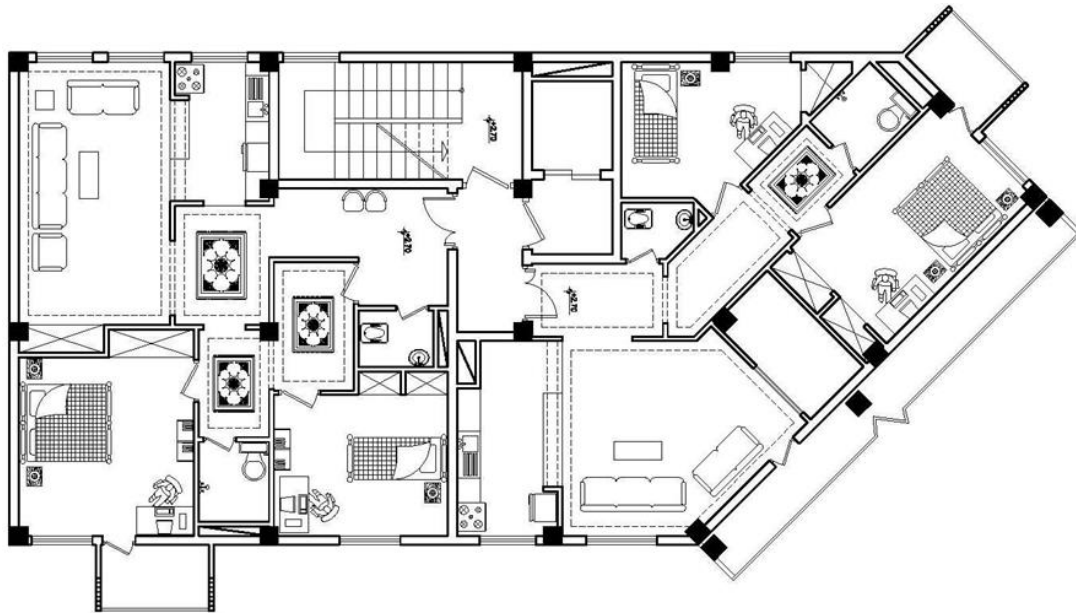


Figure 8: Ground floor plan of units (85 square meters)

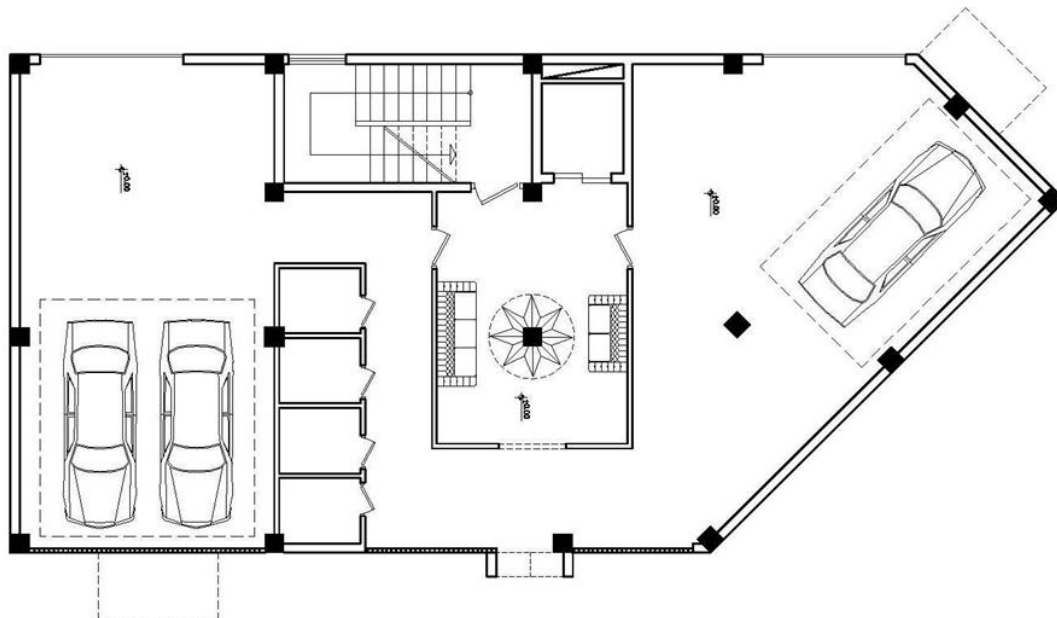


Figure 9: First & second floor plan of units (85 square meters)

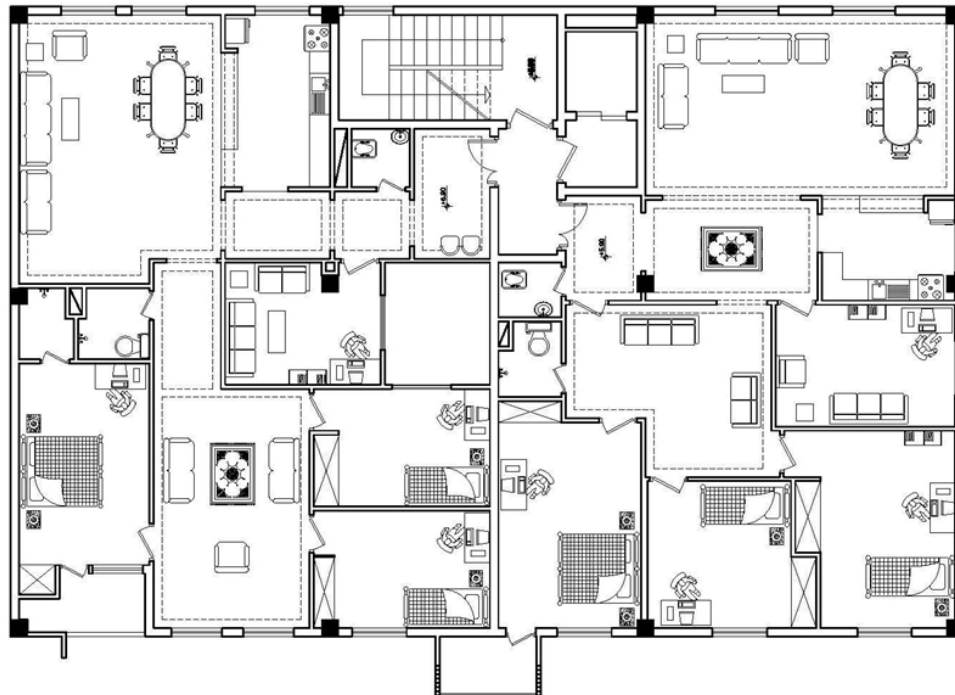


Figure 10: First & second floor plan of units (140 square meters)

Conclusion

As it is been observed from table 1, in Karaj residential complex the designer tried to combine the principles of Iranian traditional house architecture and the values of Iranian-Islamic culture with the needs and desires of contemporary residents. So we have a unique space that meets the needs of contemporary residents and root in the authentic Iranian culture and its traditional architecture. Cleanliness and purity, contentment, cooperation and humility that are rooted in the religious values of Iranians are known as the most important pillars of the design process.

Karaj residential complex can be considered as one of the most successful projects in terms of referring to some of the features and elements of Iranian traditional architecture by means of integrating them with the resident's contemporary needs.

Consequently, this project can be a successful model in terms of integration of Iranian traditional values in the current housing design that would eventually improve the quality of design in the contemporary architecture; as in the recent decades the contemporary housing designs faced with most complete absence of traditional methods in many parts of Iran, which means the lack of cultural and environmental considerations in them that would result in an inappropriate architecture. Contemporary architects should be aware of new approaches to re-integrate culture, tradition, and climate into their designs, for creating building that are sustainable and compatible with their local needs and contexts.

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