Iranian calendars

The **Iranian calendars** or **Iranian chronology** (Persian: گاهشاری ایرانی, *Gāh-Šomāri-ye Irāni*) are a succession of calendars invented or used for over two millennia in <u>Iran</u>, also known as Persia. One of the longest chronological records in human history, the Iranian calendar has been modified time and again during its history to suit administrative, climatic, and religious purposes. The most influential person in laying the frameworks for the calendar and its precision was the 11th century <u>Persian polymath</u>, hakim <u>Omar Khayyam</u>. The modern Iranian calendar is currently the official <u>civil calendar</u> in Iran and Afghanistan.

The Iranian <u>new year</u> begins at the midnight nearest to the instant of the <u>northern spring equinox</u>, as determined by astronomic calculations for the <u>meridian</u> (52.5°E). It is, therefore, an observation-based calendar, unlike the <u>Gregorian</u>, which is rule-based. This equinox occurs on or about 20 March of the Gregorian calendar. The time zone of Iran is Iran Standard Time, UTC+03:30.

Contents

History

Ancient calendars

Old Persian calendar

Zoroastrian calendar

Modifications by Parthians, Ardashir I, Hormizd I, Yazdgerd III

Muslim conquest

Medieval era: Jalali calendar

Modern calendar: Solar Hijri (SH)

See also

References

Citations

Bibliography

External links

History

Ancient calendars

The earliest evidence of Iranian calendrical traditions is from the <u>second millennium BC</u> and possibly even predates the appearance of the Iranian prophet <u>Zoroaster</u>. The first fully preserved calendar is that of the <u>Achaemenids</u>, a royal dynasty of the 5th century BC who gave rise to Zoroastrianism. Throughout recorded history, Persians have been keen on the idea and importance of having a calendar. They were

among the first cultures to use a <u>solar calendar</u> and have long favoured a solar over <u>lunar</u> and <u>lunisolar</u> approaches. The sun has always been a religious and divine symbol in <u>Iranian culture</u> and is the origin of the folklore regarding Cyrus the Great. [2]

Old Persian calendar

Old Persian inscriptions and tablets indicate that early Iranians used a <u>360-day calendar</u> based on the solar observation directly and modified for their beliefs. Days were not named. The months had two or three divisions depending on the phase of the moon. Twelve months of 30 days were named for festivals or activities of the <u>pastoral</u> year. An <u>intercalation</u> month was added periodically to keep the calendar synchronized with the seasons. [3]

The following table lists the Old Persian months, alongside the approximate Gregorian months and approximate Babylonian lunar months. [4]

Order	Approximate corresponding Julian months	Old Persian	Elamite spelling	Meaning	Approximate corresponding Babylonian lunar month(s)
1	March–April	Ādukanaiša	Hadukannaš	uncertain	<u>N</u> īsannu
2	April–May	Оūravāhara	Turmar	Possibly "(Month of) strong spring"	Ayyāru
3	May–June	Θāigraciš	Sākurriziš	"Garlic-collecting month"	Sīmannu
4	June-July	Garmapada	Karmabataš	"Heat-station (month)"	Du'ūzu
5	July-August	-	Turnabaziš	_	Ābu
6	August–September	-	Karbašiyaš	_	Ulūlū
7	September–October	Bāgayādiš	Bakeyatiš	"(Month) of the worship of <u>baga</u> (god, perhaps <u>Mithra</u>)"	Tašrītu
8	October–November	*Vrkazana	Markašanaš	"(Month) of wolf killing"	Arahsamna
9	November–December	Āçiyādiya	Hašiyatiš	"(Month) of the worship of the fire"	Kisilīmu
10	December–January	Anāmaka	Hanamakaš	"Month of the nameless god(?)"	Tebētu
11	January–February	*Owayauvā	Samiyamaš	"The terrible one"	Šabāţu
12	February–March	Viyax(a)na	Miyakannaš	"Digging-up (month)"	Addāru

There were four farming festivals, symmetric about *maidyoshahem*:

Festival	Time from previous
hamaspathmaidyem	75 days
maidyoshahem	105 days
ayathrem	105 days
maidyarem	75 days

Two more festivals were later added, creating the six *gahanbar*:

Festival	Time from previous
hamaspathmaidyem (end of retirement)	75 days
maidyozarem (spring)	45 days
maidyoshahem (mid-summer)	60 days
paitishahem (harvest)	75 days
ayathrem (end of the summer)	30 days
maidyarem	75 days

Zoroastrian calendar

The first calendars based on <u>Zoroastrian</u> cosmology appeared in the later Achaemenid period (650 to 330 BC). They evolved over the centuries, but month names changed little until now.

The unified <u>Achaemenid Empire</u> required a distinctive Iranian calendar, and one was devised in <u>Egyptian</u> tradition, with 12 months of 30 days, each dedicated to a <u>yazata</u> (Eyzad), and four divisions resembling the Semitic week. Four days per month were dedicated to <u>Ahura Mazda</u> and seven were named after the six <u>Amesha Spentas</u>. Thirteen days were named after Fire, Water, Sun, Moon, <u>Tiri</u> and Geush Urvan (the soul of all animals), Mithra, <u>Sraosha</u> (Soroush, yazata of prayer), <u>Rashnu</u> (the Judge), <u>Fravashi</u>, <u>Bahram</u> (yazata of victory), Raman (Ramesh meaning peace), and <u>Vata</u>, the divinity of the wind. Three were dedicated to the female divinities, <u>Daena</u> (yazata of religion and personified conscious), <u>Ashi</u> (yazata of fortune) and <u>Arshtat</u> (justice). The remaining four were dedicated to <u>Asman</u> (lord of sky or Heaven), <u>Zam</u> (earth), Manthra Spenta (the Bounteous Sacred Word) and Anaghra Raocha (the 'Endless Light' of paradise).

The month names and their modern versions are given in the following table.

Order	Avestan name of the Yazata (in the genitive)	Approximate meaning of the name	Pahlavi Middle Persian	Modern Ira	nian Persian
Older	Romanized	English	Romanized	Native Script	Romanized
1	Fravašinąm	(Guardian spirits, souls of the righteous)	Frawardīn	فروردین	Farvardīn
2	Ašahe Vahištahe	"Best Truth" / "Best Righteousness"	Ardwahišt	اُردیبهشت	Ordībehešt
3	<u>Haurvatātō</u>	"Wholeness" / "Perfection"	Khordād	خرداد	Khordād
4	Tištryehe	"Sirius"	Tīr	تير	Tīr
5	Amərətātō	"Immortality"	Amurdād	مرداد	Mordād
6	Xšaθrahe Vairyehe	"Desirable Dominion"	Shahrewar	شهريور	Shahrīvar
7	Miθrahe	"Covenant"	Mihr	مهر	Mehr
8	Apąm	"Waters"	Ābān	آبان	Ābān
9	Āθrō	"Fire"	Ādur	آذر	Āzar
10	<u>Daθušō</u>	"The Creator" (i.e. Ahura Mazda)	Day	دی	Dey
11	Vaŋhēuš Manaŋhō	"Good Spirit"	Wahman	بهمن	Bahman
12	Spəntay å Ārmatōiš	"Holy Devotion"	Spandarmad	اسفند	Esfand

The calendar had a significant impact on religious observance. It fixed the pantheon of major divinities, and also ensured that their names were uttered often, since at every Zoroastrian act of worship the yazatas of both day and month were invoked. It also clarified the pattern of festivities; for example, Mitrakanna or Mehregan was celebrated on Mithra day of Mithra month, and the Tiri festival (Tiragan) was celebrated on Tiri day of the Tiri month.

In 538 BC <u>Cyrus the Great</u> (uncertain if he was a Zoroastrian) conquered Babylon and the Babylonian luni-solar calendar came into use for civil purposes. <u>Cambyses</u> conquered Egypt in 525 BC. He was accompanied by <u>Darius</u>, a Zoroastrian who became ruler of the Persian empire in 517 BC. The Zoroastrians adopted the wandering Egyptian solar calendar of twelve months of thirty days plus five <u>epagomenal days</u>. As their year began in the spring (with the festival of *norouz*) the *epagomenai* were placed just before *norouz*.

In Egypt the star Sirius had significance since every 1460 years (the Sothic cycle) its heliacal rising (just before sunrise) marked the Egyptian new year and the inundation of the Nile. In Persia also the star had significance, since its heliacal rising there also coincided with the coming of the rain. The fourth Persian month was *Tishtrya* (Sirius, rain star). The vernal equinox at Greenwich fell on the first day of the first month from 487 to 483 BC (inclusive). Adopting S H Taqizadeh's date of 28 March 487 BC for the reform^[5] the calendar for that year is as follows:

* denotes 1 Epagomene

Egyptian month	First day	Persian month	First day
4	23 March	1	23*–28 March
5	22 April	2	27 April
6	22 May	3	27 May
7	21 June	4	26 June
8	21 July	5	26 July
9	20 August	6	25 August
10	19 September	7	24 September
11	19 October	8	24 October
12	18 November	9	23 November
1	18*–23 December	10	23 December
2	22 January	11	22 January
3	21 February	12	21 February

The fourth month includes 20 July, the date of the heliacal rising of Sirius. In the first year the people carried on using the old calendar, anticipating festival dates by five days. As each day is named after a god, it is important to observe the celebrations on the right day. Thus the *fravasis* festival, which in the old calendar was kept between sunset on 30 Spandarmad and sunrise on 1 Frawardin, was now observed throughout the *epagomenai*. In the second year of the reform, the old 30 Spandarmad was the new 25 Spandarmad, so from then on the festival covered eleven days, up to the new 1 Frawardin. Five days was considered enough for other festivals, however.

In all the lands where the Persian calendar was used the *epagomenai* were placed at the end of the year. To offset the difference between the agricultural year and the calendar year (the tax-gathering season began after the harvest) the start of the *araji* (land-tax) year was delayed by one month every 120 years. A Roman historian, Quintus Curtius Rufus, describing a ceremony in 333 BC, writes:

The magi were followed by three hundred and sixty-five young men clad in purple robes, equal in number to the days of a whole year; for the Persians also divided the year into that number of days. [6]

After the conquests by Alexander the Great and his death, the Persian territories fell to one of his generals, Seleucus (312 BC), starting the Seleucid dynasty of Iran. Based on the Greek tradition, Seleucids introduced the practice of dating by era rather than by the reign of individual kings. Their era became known as that of Alexander, or later the Seleucid era. Since the new rulers were not Zoroastrians, Zoroastrian priests lost their function at the royal courts, and so resented the Seleucids. Although they began dating by eras, they established their own era of Zoroaster.

That was the first serious attempt to determine the dates associated with the prophet Zoroaster's life. Priests had no Zoroastrian historical sources, and so turned to Babylonian archives famous in the ancient world. From these they learned that a great event in Persian history took place 228 years before the era of Alexander. In fact, this was the conquest of <u>Babylon</u> by Cyrus the Great in 539 BC. But the priests misinterpreted this date to be the time the "true faith" was revealed to their prophet, and since <u>Avestan</u> literature indicates that revelation happened when Zoroaster was 30 years old, 568 BC was taken as his

year of birth. The date entered written records as the beginning of the era of Zoroaster, and indeed, the <u>Persian Empire</u>. This incorrect date is still mentioned in many current encyclopedias as Zoroaster's birth date.

Modifications by Parthians, Ardashir I, Hormizd I, Yazdgerd III

The <u>Parthians</u> (Arsacid dynasty) adopted the same calendar system with minor modifications, and dated their era from 248 BC, the date they succeeded the Seleucids. Their names for the months and days are Parthian equivalents of the Avestan ones used previously, differing slightly from the <u>Middle Persian</u> names used by the <u>Sassanians</u>. For example, in Achaemenid times the modern Persian month 'Day' was called Dadvah (Creator), in Parthian it was Datush and the Sassanians named it Dadv/Dai (Dadar in Pahlavi).

When in April of AD 224 the Parthian dynasty fell and was replaced by the Sasanid, the new king, <u>Ardashir I</u>, abolished the official Babylonian calendar and replaced it with the Zoroastrian. This involved a correction to the places of the *gahanbar*, which had slipped back in the seasons since they were fixed. These were placed eight months later, as were the *epagemonai*, the 'Gatha' or 'Gah' days after the ancient Zoroastrian hymns of the same name. Other countries, such as the Armenians and Choresmians, did not accept the change. The new dates were:

No.	Name	Achaemenid	Choresmian	Sasanian	Time since previous
1	maidyozarem	(11-) 15 ii (Ardawahisht)	15 v	(11-) 15 x (Day)	45 days
2	maidyoshahem	(11-) 15 iv (Tir)	15 vii	(11-) 15 xii (Spandarmad)	60 days
3	paitishahem	(26-) 30 vi (Shahrivar)	30 ix	(26-) 30 ii (Ardawahisht)	75 days
4	ayathrem	(26-) 30 vii (Mihr)	30 x	(26-) 30 iii (Khordad)	30 days
5	maidyarem	(11-) 15 x (Day)	10 i	(11-) 15 vi (Shahrewar)	75 days
6	hamaspathmaidyem	(1-) 5 Epagomene	30 iii	(1-) 5 Epagomene	80 days

In AD 224 the vernal equinox at Greenwich fell at noon on 21 March, which was 22 Shahrewar. Immediately after the reform 21 March corresponded to 27 Shahrewar. Here is the calendar for AD 225–6:

* = 1 Epagomene

Armenian month	First day	Egyptian month	First day	Persian month	First day
1	26* September–1 October	4	26 September	1	26 September
2	31 October	5	26 October	2	26 October
3	30 November	6	25 November	3	25 November
4	30 December	7	25 December	4	25 December
5	29 January	8	24 January	5	24 January
6	28 February	9	23 February	6	23 February
7	30 March	10	25 March	7	25 March
8	29 April	11	24 April	8	24 April
9	29 May	12	24 May	9	24*–29 May
10	28 June	1	23*–28 June	10	28 June
11	28 July	2	28 July	11	28 July
12	27 August	3	27 August	12	27 August

The change caused confusion and was immensely unpopular. The new *epagemonai* were referred to as "robber days". The people now observed the "Great" *nowruz* on 6 Frawardin, which was Zoroaster's birthday and corresponded to 1 Frawardin in the old calendar. The new 1 Frawardin was observed as the "lesser" *nowruz*. Hormizd I (AD 272–273) made the intervening days into festivals as well. In AD 273, the vernal equinox at 0° fell at 05:00 UTC on 21 March.

<u>Yazdegerd I</u> reigned from AD 399–420. In AD 400 the equinox fell about 19 March, which was 9 Aban. According to al-Biruni, in that reign there was a double adjustment of the start of the *araji* year. The tenth-century astronomer Abu'l-asan Kusyar noted that during the reign of Osrow II (AD 589–628) the sun entered Aries in Adur. This happened throughout his reign. An *araji* era was introduced dating from AD 621, and the Yazdegerdi era dates from 16 June AD 632, so the Yazdegerdi era is eleven years behind the *araji*.

Muslim conquest

The Muslim rulers who took over from the middle of the seventh century used the <u>Islamic calendar</u> for administration, which caused hardship because the year was shorter - i.e. a tax which was formerly collected after the harvest would now have to be paid before the harvest. Traditionally it is said that the caliph Omar reintroduced the Persian calendar for tax collection purposes.

In AD 895 there was another double readjustment of the start of the *araji* year. It moved from 1 Frawardin (12 April) to 1 Khordad (11 June). By AD 1006 the vernal equinox, 15 March, was again coinciding with *nowruz*, 1 Frawardin. In that year, therefore, the *epagemonai* were delayed four months, moving from the end of Aban to their old position at the end of Spandarmad. This is the calendar for AD 1006/7:

* denotes 1 Epagomene

Armenian month	First day	Old Egyptian month	First day	Persian month	First day
1	15*–20 March	4	15 March	1	10*–15 March
2	19 April	5	14 April	2	14 April
3	19 May	6	14 May	3	14 May
4	18 June	7	13 June	4	13 June
5	18 July	8	13 July	5	13 July
6	17 August	9	12 August	6	12 August
7	16 September	10	11 September	7	11 September
8	16 October	11	11 October	8	11 October
9	15 November	12	10 November	9	10 November
10	15 December	1	10*–15 December	10	10 December
11	14 January	2	14 January	11	9 January
12	13 February	3	13 February	12	8 February

The *gahanbar* didn't move quite to their old places, because the fifth moved to 20 Day, which was the old 15 Day, thus increasing the interval between the fourth and fifth to eighty days and reducing the interval between the fifth and sixth to 75 days. The new dates were:

No.	Name	Date	Time since previous
1	maidyozarem	(11-) 15 ii (Ardawahisht)	45 days
2	maidyoshahem	(11-) 15 iv (Tir)	60 days
3	paitishahem	(26-) 30 vi (Shahrivar)	75 days
4	ayathrem	(26-) 30 vii (Mihr)	30 days
5	maidyarem	(16-) 20 x (Day)	80 days
6	hamaspathmaidyem	(1-) 5 Epagomene	75 days

Medieval era: Jalali calendar

In AD 1079, by the order of the Jalal Al-Din Shah <u>Seljuqi</u>, the Islamic Calendar (which was and is based on the lunar system) was replaced in Persia by the calendar of <u>Omar Khayyam</u> and was called the Jalali Calendar. Khayyam and his team had worked 8 years in <u>Isfahan</u>, the capital of Iran during the <u>Seljuq dynasty</u>. The research and creation of the Khayyam calendar was financially supported by Jalal Al din Shah. Khayyam designed his calendar in which the beginning of the new year, season and month are aligned and he named the first day of the spring and the new year to be Norooz (also spelled <u>Nowruz</u>). Before Khayyam's calendar, Norooz was not a fixed day and each year could fall in late winter or early spring.

From 15 March 1079, when the calendar had slipped a further eighteen days, the *araji* calendar was reformed by repeating the first eighteen days of Frawardin. Thus 14 March was 18 Frawardin *qadimi* (old) or *farsi* (Persian) and 15 March was 1 Frawardin *jalali* or *maleki* (royal). This new calendar was

astronomically calculated, so that it did not have *epagemonai* – the months began when the sun entered a new sign of the zodiac.

About 120 years after the reform of AD 1006, when the vernal equinox was starting to fall in Ardawahisht, Zoroastrians made it again coincide with *nowruz* by adding a second Spandarmad. This *Shensai* calendar was a month behind the *qadimi* still used in Persia, being used only by the Zoroastrians in India, the Parsees. On 6 June 1745 (Old Style) some Parsees re-adopted the *qadimi* calendar, and in 1906 some adopted the *Fasli* calendar in which 1 Frawardin was equated with 21 March, so that there was a sixth epagomenal day every four years. In 1911 the *jalali* calendar became the official national calendar of Persia. Some Zoroastrians in Persia now use the *Fasli* calendar, having begun changing to it in 1930.

Modern calendar: Solar Hijri (SH)

The present Iranian calendar was legally adopted on 31 March 1925, under the early <u>Pahlavi dynasty</u>. The law said that the first day of the year should be the first day of spring in "the true solar year", "as it has been" ever so. It also fixed the number of days in each month, which previously varied by year with the <u>sidereal zodiac</u>. It revived the ancient Persian names, which are still used. 1 Farvardin is the day whose midnight start is nearest to the instant of vernal equinox. The first six months have 31 days, the next five thirty, and the twelfth has 29 days and 30 in leap years.

It specified the origin of the calendar to be the <u>Hijrah</u> of Muhammad from Mecca to Medina in AD 622. It also deprecated the 12-year cycles of the Chinese-Uighur calendar which were not officially sanctioned but were commonly used.

In 1976, Shah Mohammad Reza Pahlavi changed the origin of the calendar to the beginning of Cyrus the Great's reign as its first year, rather than the Hijra of Muhammad. Overnight, the year changed from 1355 to 2535. This change only lasted until the Iranian revolution in 1979, at which time the calendar reverted to Solar Hijri. [8]

Correspondence of Solar Hijri and Gregorian calendars (Solar Hijri leap years are marked *):[9]

33-year cycle ^[10]	Solar Hijri year	Gregorian year	Solar Hijri year	Gregorian year
1	1354*	21 March 1975 – 20 March 1976	1387*	20 March 2008 – 20 March 2009
2	1355	21 March 1976 – 20 March 1977	1388	21 March 2009 – 20 March 2010
3	1356	21 March 1977 – 20 March 1978	1389	21 March 2010 – 20 March 2011
4	1357	21 March 1978 – 20 March 1979	1390	21 March 2011 – 19 March 2012
5	1358*	21 March 1979 – 20 March 1980	1391*	20 March 2012 – 20 March 2013
6	1359	21 March 1980 – 20 March 1981	1392	21 March 2013 – 20 March 2014
7	1360	21 March 1981 – 20 March 1982	1393	21 March 2014 – 20 March 2015
8	1361	21 March 1982 – 20 March 1983	1394	21 March 2015 – 19 March 2016
9	1362*	21 March 1983 – 20 March 1984	1395*	20 March 2016 – 20 March 2017
10	1363	21 March 1984 – 20 March 1985	1396	21 March 2017 – 20 March 2018
11	1364	21 March 1985 – 20 March 1986	1397	21 March 2018 – 20 March 2019
12	1365	21 March 1986 – 20 March 1987	1398	21 March 2019 – 19 March 2020
13	1366*	21 March 1987 – 20 March 1988	1399*	20 March 2020 – 20 March 2021
14	1367	21 March 1988 – 20 March 1989	1400	21 March 2021 – 20 March 2022
15	1368	21 March 1989 – 20 March 1990	1401	21 March 2022 – 20 March 2023
16	1369	21 March 1990 – 20 March 1991	1402	21 March 2023 – 19 March 2024
17	1370*	21 March 1991 – 20 March 1992	1403*	20 March 2024 – 20 March 2025
18	1371	21 March 1992 – 20 March 1993	1404	21 March 2025 – 20 March 2026
19	1372	21 March 1993 – 20 March 1994	1405	21 March 2026 – 20 March 2027
20	1373	21 March 1994 – 20 March 1995	1406	21 March 2027 – 19 March 2028
21	1374	21 March 1995 – 19 March 1996	1407	20 March 2028 – 19 March 2029
22	1375*	20 March 1996 – 20 March 1997	1408*	20 March 2029 – 20 March 2030

23	1376	21 March 1997 – 20 March 1998	1409	21 March 2030 – 20 March 2031
24	1377	21 March 1998 – 20 March 1999	1410	21 March 2031 – 19 March 2032
25	1378	21 March 1999 – 19 March 2000	1411	20 March 2032 – 19 March 2033
26	1379*	20 March 2000 – 20 March 2001	1412*	20 March 2033 – 20 March 2034
27	1380	21 March 2001 – 20 March 2002	1413	21 March 2034 – 20 March 2035
28	1381	21 March 2002 – 20 March 2003	1414	21 March 2035 – 19 March 2036
29	1382	21 March 2003 – 19 March 2004	1415	20 March 2036 – 19 March 2037
30	1383*	20 March 2004 – 20 March 2005	1416*	20 March 2037 – 20 March 2038
31	1384	21 March 2005 – 20 March 2006	1417	21 March 2038 – 20 March 2039
32	1385	21 March 2006 – 20 March 2007	1418	21 March 2039 – 19 March 2040
33	1386	21 March 2007 – 19 March 2008	1419	20 March 2040 – 19 March 2041

See also



- Solar Hijri calendar
- Tabarian calendar
- Armenian calendar
- Lunar Hijri calendar
- Pre-Islamic Arabian calendar
- Assyrian calendar
- Mandaean calendar
- Hebrew calendar
- Babylonian calendar
- Anno Graecorum
- Rumi calendar
- Royal stars
- Shanbeh

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External links

- How the leap years are calculated (http://www.tondering.dk/claus/cal/persian.php#leap)
- Meaning of the names of the months in the Persian Calendar (http://www.iranian.com/History/April99/Months/index.html)
- Persian(shamsi)/Gregorian/Islamic(hijri) Windows Gadget with persian occasions (https://web.archive.org/web/20180418111538/http://www.gita.ir/products/calendar/gadget.aspx)

Online calendars and converters

- PersDay.com: Online Persian Calendar and Memo Book Web Application specially designed for Iranians, shows Persian(Hijri-Shamsi), Gregorian, and Hijri-Ghamari calendars for each day; Users can write different types of notes for each day, week, month, season, or year. (http://www.PersDay.com/)
- An online Persian(shamsi)/Gregorian/Islamic(hijri) date converter on http://www.iranchamber.com/calendar/converter/iranian_calendar_converter.php)
- Online Persian Calendar from aaahoo portal (http://www.aaahoo.com/main/dispCalendar.as

p?ULanID=E&PR=y)

- Online Persian Calendar from parstimes.com portal (http://www.parstimes.com/persian/calendar/)
- An online simple Shamsi/Gregorian date converter (https://date.samic.org)

Programming

- GPL Iranian Calendar in JavaScript (http://farhadi.ir/works/jalalijscalendar)
- System.Globalization.PersianCalendar class documentation in MSDN Library (http://msdn2.microsoft.com/en-us/library/system.globalization.persiancalendar.aspx) (The implementation of the Persian Calendar in Microsoft .NET Framework 2.0)
- Persian Zodiac a free, open source AIR application. (http://www.mshams.ir/programs/persian zodiac)
- JalaliCalendar (The implementation of the Persian Calendar in java) (https://github.com/amir mehdizadeh/JalaliCalendar)

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