

The Precise Iranian Calendar, made simple

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The Year

Human beings, like all other animals, have reckoned the seasons right from the dawn of their evolving existence. With the progress of time, they based the month on the waxing and waning phases of the moon, and also found out that there are twelve “moons” and a fraction of a day in a solar year. Those to whom the seasons were not of great importance counted the twelve moons only and cared less for the solar year. They followed, and still follow, a lunar year. Muslims have a lunar calendar. Those who were to abide by regular seasons for their flocks and fields, had to count and, as far as possible, synchronize the lunar and solar years. Some did it by intercalating one moon every three years and later learned to have further adjustments to keep the year in tune with the seasons. Lunisolar year is still used by many, and this includes the Buddhists, Hindus, and Jews. Those who followed a solar year and did not base the beginning of their year from the first of one of the four seasons are the Christians. Their year begins, close to Christmas, from 1st of January, formerly the eleventh month of the pre-Christian Romans. Months of the Christian Era are not, as far as their beginnings and ends are concerned, in harmony with the seasons.

The true solar year, also known as tropical year, was a still later discovery. One has to take equinox or solstice into account to keep an accurate track of the solar year. The equinoxes are the two intersections of the sun's apparent annual path with the celestial equator. The sun reaches the vernal equinox on 1st of *Farvardin*, on or about 21st March, the summer solstice on 1st of *Tir*, on about 22nd June, the autumnal equinox on 1st *Mehr*, on or about 23rd September, and the winter solstice on 1st of *Dey*, on or about 22 December. Because the two planes, the path of the sun and the celestial equator move in opposite directions, the equinoxes and solstices do not occur at the same points every year. This anti-clock movement of the intersection point is called precession. It moves one degree in 72 years, one Zodiac sign of 30 degrees in 2,156 years and one circle in 25,868 years. For further information on calendar, solar or tropical year, precession, and other astronomical data, refer to any good encyclopedia or a publication on astronomy and astrology.

The tropical year, based on the four seasons, is precise. It is 365.24224 solar days (365 days 5 hr 48 min 45.5 sec), and the tropical lunar year is 354.36708 solar days, a difference of 10.87516 solar days. We need not go far to find a workable calendar. Of all the present calendars, the official Iranian calendar, based on the astronomical system, is the most scientific calendar in use and bears the names of what are known as Zoroastrian months. It rightly has the vernal equinox (on or about 21st March) at the beginning of the spring and the year. The fourth month begins on the summer solstice (on or about 22 June), the seventh month on the autumnal equinox (on or about 23 September), and the ninth month on the winter solstice (on or about 22 December).

In the true seasonal year, the first half contains 186 days and the second half about 179.242 days. This means that the first six months are 31 days each, the following five months 30 days each, and the last month 29 days, but which automatically becomes 30 days in the so-called “leap” year. The four seasons begin on the first days of the seasonal quarters.

This is exactly what the Iranian calendar follows: The first six months are of 31 days each, the next five months of 30 days each and the last month is of 29 days but of 30 days in the “leap” year. Reports indicate that the Central Asian republics may follow suit.

Historical evidence that the five Gatha days were added at the end of summer proves that the early “Zoroastrian” calendar had this fact in view.

THE INDO-IRANIAN CALENDAR

Evidences from the Avesta and the Vedas show that the Indo-Iranians, like many other people, followed a lunisolar year for their animal husbandry and agricultural purpose. The names of the six *Gâhânbârs*, six parts of the Vedic year and the Achaemenian months, as seen below, show that the calendar was based on various seasonal phases of the year.

The Gathas speak of the paths of the sun and the stars, and speaks about the waxing and waning phases of the moon, a sure sign of an accurate lunisolar year. The language used is astronomical, and it confirms the reports written in ancient Middle Eastern and Mediterranean writings that Zarathushtra was an outstanding astronomer also. It also confirms the statement in post-Sassanian Iranian astronomy books that Zarathushtra built an observatory in **Zabol**, Sistan (eastern Iran) and that it was inaugurated on 21st March 1725 BCE, the day King Vishtaspa and his courtiers converted, chose the Good Religion and joined the Zarathushtrian Fellowship. It also provides us with the clue that the Good Religion was founded by Zarathushtra, exactly twelve years earlier on vernal equinox of 1737 BCE.

The Vispered, dedicated only to the six seasonal festivals, the *Gâhânbârs*, also shows that the early Zarathushtrian calendar was almost the old Indo-Iranian lunisolar calendar with its waxing and waning lunar phases. The month was based on moon's phases, and the year was calculated on the solar basis. The difference was corrected by an intercalation of eleven days at the end of the year on the *Hamaspathmaidhaya* Gahanbar of the vernal equinox. This was 0.12484 day or 2.99616 hours shorter. Only a further intercalation of one day after eight years (precisely after 8.010253 years), could keep the seasonal festivals in their proper places. How did the Gathic people correct it, we do not know. We know this much that no complaint has been recorded by them about the festivals drifting away from their relevant agricultural seasons.

Sometime during the later Avestan age, the year was made into a purely solar year of 365 days with twelve months of thirty days and the five “Gatha” days as the intercalary period. Should we believe a 9th century Pahlavi tradition, the correction of five hours and a fraction was made good every four years, or the community had to wait for 40 years to intercalate 10 days or still more for 120 years to add a thirteenth month of 30 days. The usual reference to one month intercalation at the end of 120 years only reminds us of the disorder that prevailed during the last days of the Sassanian Empire and its subsequent fall.

The Leap Year

A point about intercalation in a “leap year”: The precise time of vernal equinox is determined by the International Meridian, at present Greenwich. The usual way is to count the year of 365 days and 6 hours. Four 6 hours, or one day, is added to bring back the year on the right track. This fourth year is called the “leap year” because it “leaps” one day ahead. But the actual length of the year is 6 hours but 5 hours 48 minutes and 45.5 seconds, a difference of 11 minutes and 14.5 seconds. This amounts to one day in 128 days. It was to correct this that the leap years are those eras which are divisible by 400. Even this makes the Christian or Common year 26 seconds longer than the tropical year.

The Iranian calendar does not have this problem. Its new year begins exactly at the beginning of the equinox. Although the formal Iranian year of the present days has its “leap year”, it should never worry about it. All it has to do is to see that if the “right” times falls after midnight—0 hours 00 minutes and 01 seconds to 0 hours 00 minutes and 00 seconds—the first day of the year also begins with it. This is because the Avestan day begins with the “*Ushahin Gâh*”, the Dawn Time, which begins from midnight. Yes, the Iranians have been counting their day from midnight for, at least, 3738 years and it is the West that has adopted it very late in our times. The Iranian calendar DOES NOT need a leap year at all. It is automatically within the right time. I hope that one day the authorities concerned would realize this FACT and amend the calendar by eliminating the so-called leap year.

Calendar Names

Each of the twelve Avestan months and thirty days were named after a deity, some of them old Aryan gods and goddesses discarded by Zarathushtra but reintroduced later by authoritative priests, and some of them Gathic principles personified by the same priests into divine entities, all now called yazatas, meaning “venerated, venerable”. “Year” in general was called “*yâiri*” or “*yâri*”, but the intercalated solar year was known as “*saredha*”, Old Persian of the Achaemenians “*tharda*”, and Pahlavi and modern Persian “*sâl*” (compared Sanskrit “*sharad*”, autumn, year).

This calendar is followed to this day by Iranian Zartoshtis and some Parsis. It is called *Fasli*, a modern Persian-Arabic word meaning “seasonal”. However, the majority of Parsis use *Shahenshahi*, the “Imperial” calendar. The Parsis have not intercalated since 1126 CE. It now begins in the last week of August—the 21st—a full seven months plus one day earlier. The Iranian Zoroastrians, who follow the *Qadimi* Calendar, have abandoned intercalation since 1006 CE and the 365-day year has now forwarded their new year day by eight months. As seen, the two calendars are neither precisely “Gathic” nor astronomically scientific. So is the present Zoroastrian era of 1370 followed by the Shahenshahis, Qadimis and Parsi Faslis. It is based on the ascension of the last Sassanian king Yazdegerd III (632–642 CE + 10 years of wandering until his murder by Khosrow the miller) and has no religious significance at all.

Fortunately, with the exception of a minute number, mostly residing in India, all Iranian Zoroastrians have given up the Qadimi calendar in favor of the Fasli one, and they reckon the Zarathushtrian Religious Era as the beginning. At present there is a move to unify all Zoroastrians, at least in North America and Europe, to adopt the Fasli calendar.

Names of Seasonal Timings

The Gâhânbârs:

The agricultural people were in tune with nature in their day-to-day life. They fully knew the solar and lunar movements and the changes in the seasons. They had timed their activities to suit the climate in which they lived. This timetable was kept in step with *saredha*, the tropical solar year of 365 days, 5 hr, 48 min, and 45.5 sec, but differed a little on certain points.

Their activities were scheduled to correspond with various phases of their agricultural life on the Iranian Plateau. It was divided into six phases. The end of one phase and the beginning of other were celebrated as a special time of festivity. The six seasonal festivals were:

- (1) *Hamaspathmaidhaya*, meaning “vernal equinox”, the 1st day of Farvardin, the beginning of spring, on or about 21st March, was to celebrate the end of the old year and the beginning of the new year. It was, according to the Avesta, the time to “properly set” everything and prepare for the new year.
- (2) *Maidhyoi-zaremaya* (Mid-spring), 14th day of Ardibehesht, on or about 4th May, was the time to celebrate the occasion for the cattle having delivered their young and yielded “abundance of milk” and also for appraising the crops sown in late winter or early spring.
- (3) *Maidhyoi-shema* (Midsummer), 12th day of Tir, on or about 3rd July, was the beginning of the harvesting season.
- (4) *Paitish-hahya* (Grain-reaping), 25th day of Shahrivar, on or about 16th September, marked the end of harvesting.
- (5) *Ayâthrema* (no-travel), 24th day of Mehr, on or about 16th October, was to enjoy the end of trade caravans and the time to mate cattle before the winter set in.
- (6) *Maidhyâyrya* (Midyear), 15th day of Dey, on or about 4th January, heralded the passing of the winter peak and for making preparations to meet the spring with agricultural activity.

Only the first two festivals coincided with the solar seasonal changes. The others were purposely put off to meet the living conditions. They were not calendarically or traditionally bound but were very practical people, a point to note. Most probably the festivals were celebrated with sacrifices to gods and goddesses and by indulging in a joyous festivity.

Gahanbars and Zarathushtrians:

Asho Zarathushtra, born in an agricultural environment, preached and spread his Good Religion among people engaged in crop cultivation and animal husbandry. His dynamic message introduced a completely new order in spiritual, or better, as he put it, mental sphere and purged out all evil and superstitious thoughts, misleading words, harmful deeds, and superficial, superfluous rituals, but helped to strengthen and promote all the then-existing constructive activities of a good living. And the Gahanbars were one of the constructively enjoyable festivals.

Chanting and Feasting:

Avestan evidences, particularly the book of Vispered, show that the early Zarathushtrians turned the Gahanbar into an occasion to fit into their new pattern of life. Each festival was traditionally celebrated for one and later for five days. They were devoted to reciting, chanting, explaining, understanding, and holding questions-and-answers on each of the five Gathas of Asho Zarathushtra. The festival was rounded up with a feast prepared by collective participation and efforts, and merrymaking.

A piece in the Avesta directs that all participants should bring whatever they can afford—dairy products, meat, vegetables, legumes, grain, other food ingredients, and firewood. If one was not in a position to contribute in kind, one might put his or her labor in preparing the food in a common pot, or just join the prayers. The food, with a large variety of ingredients, was a tasty stew, resembling today's more sophisticated Iranian “*âsh*” or the Parsi spiced “*dhansâk*”, both relished on the occasion. Merrymaking was the folk music and dances still observed among Iranian tribes all over the Iranian Plateau and beyond.

The Zarathushtrian Assembly celebrates the Gahanbars with a relevant Gahanbar prayer, Gatha recital and explanation, a brief talk on an interesting subject, potluck lunch, friendly conversation, and music and dance.

Vedic Calendar:

It may be noted that the Indo-Aryans had also six seasons (Sanskrit *rtu*, Avestan *ratu*) evidently modified to meet the climate in the Indus Valley. They were *Vasanta* (Spring), *Grishma* (Summer), *Varsha* (The Rains), *Sharad* (Autumn), *Hemanta* (Winter), and *Shishira* (the Cool season).

Persians and Other Iranian Calendar:

The Achaemenians, Sogdians, Chorasmians, and Armenians, all Zoroastrians by faith, had their own names for their months. The names of the Achaemenian months, as given in the bas-reliefs of Darius the Great are rendered to convey (1) Irrigation-canal-cleaning month, (2) Vigorous spring, (3) Garlic-collecting month, (4) Hot-step, (7) God-veneration, (8) Wolf-birth, (9) Fire-veneration, (10) “Anâmaka—Nameless” month, and (12) Digging-up. Three names have not been given in Old Persian but we have their Elamite pronunciations and all, except two, are nonreligious terms. The Achaemenians had numbers instead of names for the days of the month. (see Old Persian, Ronald G. Kent, 2nd ed., New Haven, 1953). That confirms that the months as well as the days named after pre-Zarathushtrian deities and post-Zarathushtrian personifications

of Gathic abstracts is a later addition. There are indications that it was done during the reign of Artaxerxes II (405–359 BCE), and that naming the months and days in honor of deities were adopted from the Egyptians.

The names of the Gahanbars, and those of the Vedic, Achaemenian, Sogdian, Chorasmian, and Armenian months show that the names of the pre-Zarathushtrian and Gathic months must have been based on the seasons and social activities, and not on deities. These old names have, however, been so well obliterated by the authoritarian priests that we do not have any inkling of what they were.

Later Avestan Calendar:

The names of the twelve months in modern Persian and their Avestan forms with their corresponding Zodiac names are:

1. Farvardîn	Fravashi/Fravarti	Aries	21 March
2. Ardîbehesht	Asha Vahishta	Taurus	21 April
3. Khordâd	Haurvatât	Gemini	22 May
4. Tîr	Tishtrya	Cancer	22 June
5. Amordâd	Ameretâ	Leo	23 July
6. Shahrîvar	Khshathra Vairya	Virgo	23 August
7. Mehr	Mithra	Libra	23 Sept.
8. Âbân	Ap	Scorpio	23 Oct.
9. Âzar	Âthra	Sagittarius	22 Nov.
10. Dey	Dathva	Capricorn	22 Dec.
11. Bahman	Vohu Manah	Aquarius	21 Jan.
12. Esfand(ârmaz)	Spentâ Âramaiti	Pisces	20 Feb.

Note: Of these only those in bold letters are the Gathic “Primal Principles of Life”, *Âzar/Âthra* has been mentioned in the Gathas as the symbol of the Progressive Mentality (Spenta Mainyu), and “*ap*” (water) is also mentioned in the Gathic texts, but the rest are later Avestan names.

The Week

The early Avestan people had no notion of the week, a period of seven days now in universal use as a division of time. Week is a man-made unit. Its length has, among various people, been from five to ten days. But since the lunar month, one of the earliest ways of reckoning time, is alternately of 29 and 30 days with two phases of waxing and waning moon, it was quite easy to further divide it and have four quarters of seven and eight days accommodated in it. The seven planets visible to the naked eye may have also played a part in its formation. That is why weekdays are named after celestial bodies. However, the present universal week is most probably of Chaldean or Hebrew origin, and has been generalized by Jewish, Christian and Islamic persuasion.

The later Avestan solar calendar, based on thirty days in a month, has four quarters—the first two of seven days and the last two of eight days. But Avesta and Pahlavi do not have any names for each of these quarters or for the weekdays. Modern Persian follows the Hebrew pattern of having Saturday as *Shanbeh*, Persianized form of “*Shabbath*”, and then counting from one to five as *Yek-shanbeh*, *Do-shanbeh*, *Se-shanbeh*, *Chahâr-shanbeh*, *Panj-shanbeh*, and under the Islamic influence, *Âdineh* or *Jom'eh* for Friday, the day of mass prayers.

Eras

Pahlavi writings tell us that the religious era began from the day Zarathushtra proclaimed his Divine Mission to humanity. This era, based on the astronomical calculations that Zarathushtra declared his mission on the vernal equinox when, according to the precession, the period of Aries is supposed to have begun, comes to be 3738/39 in 2001 CE i.e. 1737 BCE. It has been called the “Year of Religion” in Pahlavi writings. The Zarathushtrian Assembly calls it the Zarathushtrian Religious Era (Z.E.R./ZRE) and has, since its establishment in 1990, observed it as the beginning of the Zarathushtrian calendar. The Zartoshti community in Iran joined in to observe ZRE as its calendar in 1993, and many Irani Zartoshtis in diaspora have also accepted it.

Earlier, each of the Iranian kings, following the pattern set by other Middle Eastern rulers, particularly the Babylonians, observed a new era from his own ascension to the throne. With as many as 80 rulers on the Iranian throne during the thousand and odd years of Achaemenians, Macedonians, Parthians, and Sassanians, much confusion in chronology has arisen, and many dates have been misinformed, misused, misplaced, misinterpreted, miscalculated, and missed. The *Yazdgerdi* era reminds one of the last Emperor who got overthrown by Arab invaders. It is not a happy recollection.

Sassanians and Two Calendars:

The Sassanians continued to maintain both the “*yâiri*” of 365 days and the “*saredha*” of 365.24224 days. The first they called “*oshmurdik*” meaning “rememberable, reckonable” and the second “*vihezakik*” meaning “moving, progressive, intercalary”. While the “rememberable” was easy for the laity to memorize and count them by names, the “intercalary” belonged to the

astronomer priests, linked with the imperial court, to keep the formal year precise and in tune with the seasons. The fall of the Sassanian Empire fell the astronomer priests of their high position. Nevertheless, the intercalary year was, Pahlavi books and the present position of the Qadimi and Shahenshahi calendars tell, kept until the 11th century CE. The decline of astronomer priests put an end to *Vihezakîk* and the lay priests have continued with their “*Ushmordîk*”, advancing about one day in every four years out of the season and the solar year.

Economic and seasonal revenue collection, however, forced the Muslim Caliphs to maintain, evidently by those astronomer priests who had embraced Islam, the intercalary year in addition to the Islamic calendar of a purely lunar year.

It was this *Vihezakîk* year maintained halfheartedly by Muslim rulers, which was improved, perfected and formally restored by Omar Khayyam and other Iranian scientists. It was named the “*Jalâlî*” calendar after its patron, Sultan Jalal al-Din Malekshah Saljuqi (1072–1092 CE).

The **Fasli** year, officially observed by Iranians—Zartoshtis, Jews, Christians, and Muslims—in modern Iran, is the “*saredha*” of the Avestan people, “*tharda*” of the Achaemenian, “*Vihezakîk*” of the Sassanians, and the “*Jalali*” of Omar Khayyam.

The precise solar year is also reckoned by all observatories in the world. It is the Universal Astronomical and Scientific Year.

It is this *Vihezakîk* (Persian “*Behizaki*”) calendar, now called “*Khorshidi*” (solar), the official Iranian calendar, the **precise** calendar, with its dates numbered, that the Zarathushtrian Assembly follows. It is astronomically precise. It is progressively Zarathushtrian.

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The Exact Nowruz Time

The true beginning of the Zarathushtrian Religious Era—*Sâl-e Dîni-ye Zartoshti*—3739 is on Tuesday, 20 March 2001 at:

Universal Time (Greenwich Mean time)	13 hours 30 minutes 40 seconds
Eastern Time (USA)	08 hours 30 minutes 40 seconds
Central Time	07 hours 30 minutes 40 seconds
Mountain Time	06 hours 30 minutes 40 seconds
Pacific Time	05 hours 30 minutes 40 seconds
Indian Standard Time	19 hours 00 minutes 40 seconds
Pakistan Standard Time	18 hours 30 minutes 40 seconds
Zabol (Original Zarathushtrian Meridian)	18 hours 04 minutes 40 seconds
Iranian Standard Time	17 hours 00 minutes 40 seconds

The Calendar Year begins on Wednesday, 1st Farvardin 3739 on 21 March 2001.

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Nowruz Table

Narrator: Zartoshtis have six seasonal thanksgiving festivals to celebrate in a year. Vernal Equinox, called *Hamaspahmaidhaya* in Avesta, meaning “Middle of Equal Paths, vernal equinox” is the top celebration. It is the beginning of spring in the northern hemisphere.

Every house gets a thorough cleaning almost a month before. Wheat, barley, lentils, and other vegetable seeds are soaked to grow on china plates and round earthenware vessels some ten days in advance, so that the sprouts are three to four inches in height by Nowruz.

A table is laid. It has a copy of the sacred book (the Gathas for Zarathushtrians), picture of Zarathushtra, a mirror, candles, incense burner, bowl of water with live gold fish, the plates and vessels with green sprouts, flowers, fruits, coins, bread, sugar cone, various grains, fresh, colorfully painted boiled eggs like “Easter eggs”, and above all, seven articles with their names beginning in Persian with the **s** or **sh**. The usual things with **s** are vinegar, sumac, garlic, *samanu* (consistency of germinating wheat), apple, *senjed* (sorb), and herbs. Those with an initial **sh** include wine, sugar, syrup, honey, candy, milk, and rice-pudding. The seven articles are prominently exhibited in small bowls or plates on the table.

Here we have a table with its white cloth. White represents spotless purity. We have seven young men and women to help us lay the table. They will personify and explain the main items. We shall begin with each of the seven **s** first, followed by seven **sh**:

- **First person:** I am *serkeh*, the vinegar. I am sour but I am a good preservative. I add taste to the things you want to preserve and relish. I symbolize tasty preservation. (places the bowl on the table on the left side and then returns with wine)
- **Second person:** I was *sharâb*, the wine. I am the nectar. I symbolize health and happiness, of course, if taken in moderation! To your health! (places the bowl on the right side of the table)
- **Third person:** I am sumac, a little tasteless, but I do make your favorite kabobs have a tangy taste, a taste you relish. I symbolize taste. (left side)
- **Fourth person:** I was *shakar*, sugar. I give your favorite foods their sweetness. Very sweet, I symbolize sweetness. (right side) Third person: I am sir, garlic. Some do not like my smell and others love my aroma. I lower blood pressure. I pacify. I symbolize peace. (left side)
- **Fifth person:** I am *sîr*, garlic. Some do not like my smell and others love my flavor. I lower blood pressure. I pacify. I symbolize “peace”. (left side)
- **Sixth person:** I was *shîr*, milk, the first food one tastes in this world. I symbolize nourishing food. (right side)
- **Seventh person:** I am *samanu*, a sweetish paste, a kind of *halwa*, made from germinating wheat. I symbolize the sprouting spring, the time for happy growth. (left side)
- **Eighth person:** I was *shireh*, syrup. I am the sap, the fluid essential for life, health and vigor. I symbolize vigorous health. (right side)
- **Ninth person:** I am *sib*, apple. I symbolize the fruitful world of ours. (left side)
- **Tenth person:** I was *shahd*, honey. I am the sweet produce of the cooperative bees. I symbolize the sweet result of team work. (right side)
- **Eleventh person:** I am *senjed*, the tasteless berry of the sorb tree. I am the fruit of a tree which provides shade in summer. I symbolize the shade you need when you want a rest. (left side)
- **Twelfth person:** I was *shirini*, candy, loved by those have a sweet tooth. I simply symbolize sweetness with no sign of bitterness. (right side)
- **Thirteenth person:** I am *sabzi*, fresh green herbs. I come from green fields. I symbolize prosperity. (left side)
- **Fourteenth person:** I was *shir-berenj*, rice-pudding, a tasty food. I symbolize food for taste and health. (right side)

(The children bring other articles and place them on the table and fill the table)

Narrator: As you see, we have a copy of the **Gathas**. They symbolize guidance for a good life. The picture of Asho **Zarathushtra** reminds us of the author of the Gathas, the founder of the Good Religion and the Conveyer of the Divine Message. The mirror reflects our past and shows us our present so that we thoughtfully plan our future. The candles are light, warmth, and energy to lead a righteous life that would, in turn, radiate light, give warmth, and provide energy for others. The incense burner gives the fragrance we need to meditate, pray to God, and ask for help and guidance. The gold fish symbolizes a happy life, full of activity and movement. The plates of green sprouts represent creativity and productivity, and so do the colorfully painted egg.

As you see, the whole table is beautifully laid. It symbolizes the Message and the Messenger, light, reflection, warmth, life, love, joy, production, prosperity, and nature. It is, in fact, a very elaborate thanksgiving table for all the good beautifully things bestowed by God.

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