



Molad

A Hebrew calendar application for a Java™ mobile device

Version 1.1
Iyar 5765 (May 2005)

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Introduction

Molad and 'Molad'

Molad (*birth*) is a Hebrew word for *new moon*. While new moon causes superstitions and horror in the Christian world, for the Jewish culture Molad means new month, new year, new live. Despite scientific declarations of the Universal mortality, for me Molad symbolises the eternity of the Universe, live, ... and the calendar !

This application is designed to suit any Java™ compatible mobile device with 50K of RAM. Colour support and screen size 120x120 or more (e.g. Nokia Series 40 and 60, Motorola T720, A830 etc) would be an advantage. With Siemens mobile devices (screen size 101x64 or 101x80 pixels), or Nokia Series 30 (96x65 pixels) the application feels less comfortable though is still fully operational.

The following features are supported:

- Calendar page for a specified day
- List of coming and past events
- Omer days
- Sedrot (Torah readings)
- Custom events

Most of other Hebrew calendar programs don't accept a secular date before year 1752 Common Era (C.E.) – the day when Gregorian calendar was introduced in England (?). It might look naive, but I can't understand why a Hebrew calendar application should depend on such a minor event. This application supports Hebrew years in the range from 1 to 5000000 – hopefully enough for now :). Given that different countries adopted Gregorian calendar at a different time, you can specify the changeover date, so that the appropriate secular calendar will be chosen automatically.

Because of limited resources the application cannot be as versatile as the ones designed for a PC, or for a specific mobile device. Here are the features that I would like to support, but either would make the application less efficient or too big, or simply impossible to implement:

- Calendar clock – I might find time for that one day.
- Monthly calendar pages – this would look terribly bad on a small screen.
- Sunrise, sunset, candle lighting time. Probably all applications (whether or not they tell it) use a sunrise/sunset algorithm from *Almamac of Computers 1990*, published by Nautical Almanac Office United States Naval Observatory Washington, DC 20392. The algorithm significantly relies a lot of trigonometric functions, while J2ME doesn't provide event basic ones. Writing own classes would be inefficient, because of a lot of floating–point calculation being involved. Floating–point calculation can be avoided with precalculated tables, but that would either be inaccurate, or enormously increase the size of application.
- Introduction date for each holiday. As far as I know, holidays like Chanukah or Purim are not as old as Pesach, therefore it doesn't look logical to show Chanukah say for year 1000 H.C. Unfortunately, I don't know exact introduction dates even for new holidays like Yom Zikaron, or Yom Atzmaut.

Credits and Links

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Daniel Sebbagh <sebbagh@hotmail.com> for his great Hebrew translation. He also suggested having native format of Hebrew dates.

HebCal by Danny Sadinoff a UNIX (Linux and Solaris) product ported to Windows.

<http://www.sadinoff.com/hebcad>

Congratulations Danny, well done. The code has been thoroughly studied and used as an excellent source of information.

Chelm.org's explanation of the Jewish Calendar

<http://www.chelm.org/jewish/calendar/explain.html>

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A clear and comprehensive explanation, even a code provided. Unfortunately the code doesn't work before year 1760 C.E., and apart from that, the logic for Rosh HaShanah calculation doesn't look 100% accurate to me.

Judaism 101. Jewish Calendar

<http://www.jewfaq.org/calendar.htm>

Copyright 1995–2001 Tracey R Rich

A very simple explanation of the calendar which doesn't pretend to be exhaustive, but might be sufficient for non-developers.

Orthodox Union

<http://www.ou.org>

A good source of information about Jewish history, culture, holidays. Contains Zmanim tables, publications, and more.

Countries Calendar Reform

<http://webexhibits.org/calendars/year-countries.html>

You might wish to visit the page to find out the date when Gregorian calendar was adopted in your area,

Releases

This section contains comments to particular application releases. Though some are obsolete, I am rather nostalgic to take them completely off the manual.

New to version 1.1 (14 Iyar 5765 / 23 May 2005)

We've got a number of comments regarding Molad, but practically no bug reports, apart from "can't install", which is something we can hardly help with, for (as it was mentioned) it's impossible to test the application everywhere. Some of tiny bugs I identified and fixed, but they are so insignificant, that there is no need to upgrade, unless you are interested in the following new features:

- Support for touchscreens (such as stylus devices like Sony–Ericsson P800, Nokia Series 90, Motorola 388, etc). Refer to [Using a pointer device \(stylus\)](#) .
- Hebrew release (translation by [Daniel Sebbagh](#)), and native format for Hebrew dates, partially supported by the English release – see [Representing Hebrew numerals in native format](#)

From the original release

The following paragraph from the original manual has become obsolete, and only nostalgic feelings prevent me for removing it :)

Current and the only version is 1.0. Today is 10th of Kislev 5764 (5 Dec 2004). Let it be a Chanukah present for the Jewish community all over the world ... and another chance to oppose Microsoft ® expansion (J2ME is one of very few platforms completely free of Microsoft interference).

Support

Molad has been developed and is maintained by *Michael Glickman* (Australia) and is distributed free of charge.

The application web site is <http://molad.palmcrust.com>

For our other (commercial and free products) for Palm and mobile devices see <http://www.palmcrust.com>

Being interested in Jewish culture, I am not a religious person, have no religious friends, and don't visit a synagogue. This is why your comments are so important to me. Please, send me your suggestions, bug reports, etc to palmcrust@yahoo.com . ***You are strongly advised not to use this address for anything not related to our software.*** The mail box quite often runs out of quota, in which case we are unable to attend a really valuable message.

The code has been developed using j2mewtk v 1.4 and 2.0 for Linux with Nokia Series 30 and 60 MIDP Concept SDKs, and occasionally tested on real devices as well as with Windows-only emulators like Nokia Series 40, Motorola and Siemens. The manual has been prepared with Netscape 7.02 composer and HTMLDOC for Linux.

For developers

I've build *moladlib* – a library, containing all the calculations used in the application (practically everithing apart from GUI). The libaray is distributed under GNU Public License (GPL). The library is available from the application site.

Another package contains the text classes used by the application. If you want to translate Molad to another language, just replace the text in the classes and send the updated files to me. Please, try to avoid the translation being longer than the original text.

How the calendars operate

This is a very brief explanation. Follow the links from [Credits and Links](#) section for better instructions.

Hebrew calendar

Have you noticed how the moon changes its shape throughout the month? At times, it shines brightly like a cream-colored ball. Other times, we can compare it to a slice of honeydew. On some nights, it looks like a split banana! Sometimes, you can't see it at all! While in bed watching the moon, take a peek through your window, shut your eyes for a moment and imagine a scene taking place many years ago in Eretz Yisrael

In the Great Beit-Din, the chief Rabbi sits in his honored place, greeting the Jew who just arrived in the court. "I saw the moon last night, Rabbi, and I believe it is the beginning of a new month," reports the Jew. The Rabbi motions to a chart with many different moon shapes hanging on the wall. "Is this the shape you saw?" asks the Rabbi, pointing to a particular shape. The man who witnessed the moon would be questioned until the judges were satisfied. When the judges heard proper testimony from at least two witnesses, they would declare that a new month had arrived

Rambam – Sefer HaMitzvot

That's how the calendar worked in good old days, until Hilel II established a fixed calendar in the year 359 C.E.

Current Hebrew Calendar (H.C.) is a synthesis of astronomy, mathematics, religion ... and creativity.

It is a lunisolar (moon + sun) calendar based on the following facts:

1. The lunar month (time between two consecutive new moons) is 29 days 12 hrs and 793 parts (chelekim), each part being a 1/1080 of an hour.
2. 235 lunar months are equal in duration to 19 solar years.

If we temporarily disregard 793 parts in the lunar month we get 29.5 days in month, or 59 days in two months. For that reason Hebrew months alternate in duration between 30 and 29:

No	Month	Days	No	Month	Days
1	Nissan	30	7	Tishri	30
2	Iyar	29	8	Cheshvan	29 or 30 (*)
3	Sivan	30	9	Kislev	30 or 29 (*)
4	Tammuz	29	10	Tevet	29
5	Av	30	11	Shevat	30
6	Elul	29	12	Adar / Adar Alef (**)	29 / 30
			13	Adar Bet (**)	29

(*) Normally Cheshvan has 29 days, Kislev has 30 days. A day can be added to Cheshvan, or taken away from Kislev in order to get a year a day longer, or shorter. See comments below.

(**) Adar Alef and Adar Bet replace Adar in a leap year – see comments below

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A year cannot be purely lunar, otherwise holiday seasons would drift. Relation 2 yields the average number of lunar months in a year as $235/19$ or $12 \frac{7}{19}$. In the Hebrew calendar a "regular" year has 12 months, but whenever the accumulated fraction jumps over a whole number (i.e. $f \cdot (y-1) < N \leq f \cdot y$, where $f=7/19$, y —year number, N —a whole number (***)), an additional month is added to a year. A year with an additional month is a *leap year*. In a leap year the last month Adar (29 days) is replaced by two months: Adar Alef (Adar 1) of 30 days, and Adar Bet (Adar 2) of 29 days. Simple mathematics show that leap years are 3rd, 6th, 8th, 11th, 14th, 17th and 19th in a 19—year cycle, so that each cycle has 12 non—leap and 7 leap years. (Indeed, 7 and 12 are special for any occasion!) *Please note that the last month in the calendar is not the last month of a year: a new year (Rosh HaShanah) starts at 1 Tishri, just in the middle of a calendar year — after all, a tricky nation can afford a tricky calendar :).*

(***) In fact we don't need to keep the old fraction! Since 19 is a prime number, a fraction like $(7 \cdot y)/19$ jumps over a whole number if and only if the remainder $(7 \cdot y) \% 19$ gets less than 7.

Remember extra 793 parts in the lunar month? Something has to be done about that. The solution provided by the calendar is pretty straightforward: calculate the exact time of a new moon (molad) for Tishri (the new year month), if it is noon or afternoon, the new year (Rosh HaShanah) is postponed one day. Well, it looks really simple ... and too simple to be the case. There is also a requirement that some holidays should not fall on a particular day of a week, like Yom Kippur must not be adjacent to Shabbat (i.e. cannot be Yom 6, or Yom 1), and Hoshanah Rabah should not fall on Shabbat. These *dehiot adjustments* might also result in Rosh HaShanah being postponed. See the source code for the details.

In order to postpone Rosh HaShanah, a day is added to Cheshvan, extending it to 30 days. Since year extension is not always astronomically justified, the following year might need to be reduced by one day to keep in path with the solar year. To do that a month is taken from Kislev leaving it with 29 days. Note that only one of the two months can be altered.

Any questions so far? I have one. How was it possible to calculate all that without a computer? :=)

Few more remarks not related to the calendar algorithm, but still might interest someone.

1. Relation 2 (19 solar yrs = 235 lunar mnth) is named *Metonic cycle* after Greek (Athenian) astronomer Meton (4th century C.E.), but there is a strong evidence that this relation was known to Babylonian and Chinese astronomers before Meton.
2. Combining facts 1 and 2 we can evaluate solar year as 365 days and 5 1847/4107 hrs, or 365 days 5 hrs 26 min 58.92 sec, where according to the current astronomical data this is 365.242199 or 365 days 5 hours 48 min and 46 sec, which is even less accurate than Julian calendar. I haven't heard about forthcoming reform of Hebrew calendar though :)
3. The Bible refers to months by numbers, not by names, and (as far as I know) there is no evidence to find out how the calendar was organized at that time. But there is a certain evidence that Babylonian calendar used 19 year cycles with 12 years of 12 months and 7 years of 13 months, and the Babylonian names of months (Nisanu, Ayaru, Simann, Du'uru, Abu, Ululu, Tashritu, Avakhsamna, Kislimu, Tebetu, Shabatu, Adaru) sound very similar to Hebrew months, BTW can you guess what was the name of 13th month? Adaru—2! Actually there is a strong belief that current Hebrew calendar is actually derived from the Babylonian and adopted probably during Exile in 6th century B.C.E..

Julian and Gregorian Calendars

The calendar used world wide is derived from Julian calendar attributed to Roman emperor Julius Caesar. The calendar assumes a solar year to be 365 days and 6 hours. This produces one extra day added to February once in every 4 years. The year with 366 instead of 365 days is a *bisestytle* or *leap year*. In *Julian calendar* every multiple of 4 corresponds to a leap year.

By 7th century C.E. the Christian world started counting years from the birth of Christ (H.C. year 3761), what is referred as Common or Christian Era (C.E.) in Jewish terminology, while dates 'Before Christ' are referred as Before Common Era (B.C.E). Please note that there is no year 0, so that year 1 B.C.E. is followed by year 1 C.E.

The actual solar year is "only" about 365 days 5 hrs and 48 min and 46 sec. This gives extra 11 min 14 sec per a year, or extra 3 days in 4 centuries. This suggests that number of leap years in 4 centuries should be reduced by 3. In the 16th century C.E. the vernal (Spring) equinox fell on 11th of March, i.e, 10 days before the calendar equinox day, which could no longer be tolerated. The new calendar, developed under the leadership of Jesuit mathematician and astronomer Christoph Clavius only slightly differs from Julian calendar. Any multiple of 100 would correspond to a leap year in Julian calendar, whereas in the new calendar for a leap year it must also be a multiple of 400. Thus years 1600 and 2000 are leap years, whereas years 1700, 1800 and 1900 aren't.

The new *Gregorian calendar* was introduced in 1582 by Pope Gregory XIII who ordered that 4th of October was to be followed by 15th of October. That dropped 10 days from October and re-established the consistency of solar and calendar years. The reform took place in Italy, Poland, Portugal and Spain, other catholic countries soon followed. In England and colonies (including Ireland, and Eastern part of USA) Gregorian calendar was introduced in 1752 (2 Sept. followed by 14 Sept.), while Christian orthodox countries adopted Gregorian calendar not until 20th century (Russia: 31Jan1918– 14Feb1918, Greece: 9Mar1924–23Mar1924).

For the complete list of calendar reform dates see <http://webexhibits.org/calendars/year-countries.html>

Representing Hebrew numerals in native format.

This manual is meant to be readable in a non-Hebrew environment, therefore Hebrew letters and numerals are spelled in English and left-to-right. What a shame ...

Hebrew traditional numeral system uses Hebrew letters to represent numbers. In particular, day of month and year in a Hebrew date are normally expressed in Hebrew notation. Unfortunately, some users might find Hebrew numerals almost completely unreadable, while for others those would be *merely* unreadable, because not all phones support Hebrew characters.

For that reason the application allows to select in which format, native(Hebrew) or numeric(common), day of month and year are represented in Hebrew dates. This is accomplished by `Hebrew Days` and `Hebrew Years` parameters in [Settings screen](#) .

The application was built in a (rather controversial) assumption that a non-Hebrew release works in a "Hebrew-intolerant" environment, therefore any use of Hebrew characters should be avoided there. For that reason, *native format for years is supported only in the Hebrew release*. As for days of month, a

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non-Hebrew release uses transliteration given by the following table:

Aleph – A	Bet – B	Gimmel – G	Daled – D	Hey – H	Vav – V
Zayin – Z	Chet – X	Tet – T	Yod – I	Caf – C	Lamed – L

(Looks bizzare, doesn't it? I simply can't think of anything better.)

The following brief explanations might help you to understand Hebrew numerals... Actually it is me who really needs help, given that there is still something I am not quite sure about... In essence, this is the way how it is implemented, and if you feel its wrong, please don't hesitate to contact me.

Hebrew numeral system is decimal, though not quite positional, for separate character sets are used for units, tens and hundreds, as given by the following table :

Units		Tens		Hundreds	
Hebrew	Common	Hebrew	Common	Hebrew	Common
Aleph —	1	Yod ׀	10	Kuf	100
Bet ׀	2	Caf ׀	20	Resh	200
Gimmel ׀	3	Lamed ׀	30	Shin	300
Daled ׀	4	Mem ׀	40	Tav	400
Hey ׀	5	Nun	50	TavKuf	500
Vav ׀	6	Samech	60	TavResh	600
Zayin ׀	7	Ayin	70	TavShin	700
Chet x	8	Pei	80	TavTav	800
Tet Ø	9	Tsadi	90	TavTavKuf	900

The number 15 and 16 are represented on the base of Tet(9), rather than on the base of Yod(10) in order to avoid inappropriate use of sacred letter combinations. Thus 15 is TetVav(9 and 6) and 16 is TetZayin(9 and 7). This also applies in case of added hundreds, e.g. 215 is ReshTetVav.

To avoid confusion between numbers and text, a *gershayim* ["'] mark is inserted in a number before the last letter. In case only one letter is used, a *geresh* ['] is appended to this letter.

I find it logical (and this is how the application works) that the last (non-single) letter is replaced with its "sofit" if applicable, e.g. 750 is TavShin"Nunsofit, rather than TavShin"Nun .

What to do with numbers over 999 ? The thousands are simply counted separately, in which case we end up with two separate numbers: one for thousands and the following one for low-order part. For example, number 5766 (current year) is Hey' TavShinSamech"Vav

Number 1000000 or over ? It seems logical to have three separate numbers for that case. However it isn't as simple as appears to be, therefore the current Molad implementation always uses a numeric format for a year over 999999.

More questions... What happens if there are only thousands (e.g. 6000)? Hebrew numeral system doesn't appear to have a sign for zero, while we obviously need a placeholder to fill the gap. The application simply

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adds a geresh['] mark for the missing triad(3–digit part), so that year 6000 is represented as Vav ' ' (with two geresh marks), while year 6 has a single geresh: Vav '

As you might have noticed, Hebrew representation for a year (**full Hebrew year format**) might be too long to fit in the Date View screen . For that reason Molad also uses **short Hebrew year format** where thousands are simply omitted unless the low order part is below 100. For example, for years 6000 to 6099 always appear in long format, while year 5766 in short format is just TavShinSamech"Vav (without Hey ' for 5 thousands), which is quite common: since we've lived in the 6th millenium for over 7 centuries there is no need to specify need to specify thousands all the time.

When Hebrew year representation is available, Set Date screen for Hebrew Date always shows years in two formats: numeric and *full* Hebrew, while Date View screen uses either numeric, or *short* Hebrew format depending on Hebrew Years parameter (see Settings). If, while in Date View, you want to get the full Hebrew year, just select Set Hebrew Date from the main menu.

Using the Application

Terms Explained

Phone Keys

This refers to keys [1] –[9], [*], [0], [#].

T9 layout

[1] [2] [3]
[4] [5] [6]
[7] [8] [9]
[*] [0] [#]

would be the best fit, however a non-T9 keypad (e.g. Nokia 3650 or Siemens SX1) will also do.

Some expensive models (Sony Ericsson P800, Nokia Series 90, Motorola 388) are designed to be used with a stylus, something the application currently does not support. However in some cases there is a way around. For example P800 has buttons labeled [A] [B] [C] [D] translated to corresponding game keys

Other Keys

Screen Buttons	Key located below the screen. All devices have at least two screen buttons: Left and Right, some models also have a middle screen button. Screen buttons are used for entering <u>Commands</u>
LEFT RIGHT UP DOWN	Press corresponding arrow key, or move joystick in appropriate direction
FIRE	The location of FIRE key is device specific. If unsure try the following: <ul style="list-style-type: none">• Press joystick, or the middle of arrow pad• SEND key (often with a green handset picture)• Right screen button
[A] [B] [C] [D]	Additional keys referred as "Game Keys". This is optional

Commands

To enter a command, press Left or Right screen button (depending on the model). This often brings you a list of available commands. Highlight a command using UP and DOWN keys, then enter FIRE to execute it. For your convenience some models assign a command like Quit, Close, Back, Cancel to a separate screen button – just press a button to select it.

Date View ("calendar") Screen

The application starts with a Date View screen for today. You can change date using navigation keys, discussed in [Controlling Date View Screen](#) .

Date View Data

Date View screen consists of several parts.

Dates

Hebrew date (right) and corresponding Common (Gregorian or Julian) date (left) year, day of week, day and month. A Secular (common) year Before Common Era (B.C.E) is shown with suffix B (e.g. 300B stands for year 300 B.C.E.)

The arrow in the middle of Date panel shows current navigation calendar:

- > Hebrew calendar is current
- <- Common calendar is current

Navigation calendar is explained in [Controlling Date View Screen](#) section.

Information Bar

A bar below the date shows an additional informations, like indicators, moon phase, day count.

Indicator is one of the following letters:

- J – Julian calendar (if omitted , then Gregorian calendar is used)
- L – Leap year. Left L refers to a Common leap year, while right L denotes Hebrew leap year.

Moon phase is shown as a shape and percentage of lunar month elapsed:

Percentage	Phase	Percentage	Phase
0 – 11	New moon	50 – 61	Full moon
12 – 24	Waxing crescent	62 – 74	Waning gibbous
25 – 37	First quarter	75 – 87	Third quarter
38 – 49	Waxing gibbous	88 – 99	Waning crescent

Day count is either an Omer day (Sefirat HaOmer starts after Passover/Pesach and ends before Shavuot), or a day in 3-week period between two fasts (17 Tammuz and 9 Av), or a day from Rosh HaShanah if neither Omer nor 3W apply. Omer and 3W days are shown if 'show Omer/3W' is enabled in Settings, in which case a special colour is used for Omer/3W pages.

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The information bar for a Shabbat day might be extended with Shabbat names (like *Shabbat HaGadol* being the last Shabbat before Pesach), or weekly Torah readings (sedrot). For that you need to enable respectively 'show Shabbat' and/or 'show Sedrot' in Settings.

Events

The list of events (holidays and custom events) corresponding to current day. The events shown here are specified with DISPLAYED event option.

Controlling Date View Screen

The following keys are used to control Date View screen

Key (-s)	Action
LEFT or [4]	<u>Previous day</u>
RIGHT or [6]	<u>Next day</u>
UP or [2]	<u>Previous month</u> Goes one Hebrew or Secular month back depending on navigation calendar
DOWN or [8]	<u>Next month</u> Goes one Hebrew or Secular month forward depending on navigation calendar
[*] or [A]	<u>Previous Year</u> Goes one Hebrew or Secular year back depending on navigation calendar.
[#] or [B]	<u>Next Year</u> Goes one Hebrew or Secular year forward depending on navigation calendar.
[3] or [D]	<u>Navigate By</u> Change navigation calendar. Current navigation calendar is indicated by an arrow in the middle of date pane (see <u>Date View Data</u>).
[1]	<u>Settings</u> Show <u>Settings</u> screen
FIRE or [5]	<u>Today</u> Go to current date
[7]	<u>Coming events</u> Same as Coming Events command (see <u>Date View Commands</u>)
[9]	<u>Past events</u> Same as Past Events command (see <u>Date View Commands</u>)
[0] or [C]	<u>Turn Page</u> If the information requires several pages, pressing a key will select next display page. See <u>Multiple Pages and Auto-Turn Page</u> .

Date View Commands

The following commands are available from Date View screen.

Command Name	Description
Coming Events	Show list of events preceding the viewed date. The events are shown in ascending date order. Each line contains event name and either event date, or number of days left, depending on the List item is <u>Settings</u> . The events shown in the list are specified with LISTED event option.
Past Events	Show list of events following the viewed date. The events are shown in descending date order. Each line contains event name and either event date, or number of days past, depending on the List item is <u>Settings</u> . The events shown in the list are specified with LISTED event option
Today	Go to current date
Set Hebrew Date	Show <u>Date Set screen</u> for entering a Hebrew date
Set Common Date	Show <u>Date Set screen</u> for entering a Common date
Settings	Show <u>Settings</u> screen
Help	Show Help for Date View page
About Molad	Show release information, application details and credits
Quit	Quit application

Multiple Pages and Auto-Turn Page

In some cases (especially with a small size screen) screen size might be insufficient to fit all data. In this case the information is shown in several pages. Use [0] or [C] to turn page. While turning pages you get back to starting page after all pages are displayed.

You can specify Auto-Turn Page option, in which case page will be turned automatically every 4 seconds.

Date Set Screen

Date set screen provides another way for to specify a date for Date View. It might be more efficient than using a navigation keys, especially with a slow device, or the target date is far away from the viewed date. In particular you can jump directly to a specified date.

You can call Date Set to select either Hebrew or Common date. Since only one date is shown, navigation calendar is not applicable to Date Set screen.

Date Set screen is also used to specify the last Julian date for Settings .

Controlling Date Set Screen

The following keys are used:

Key (-s)	Action
LEFT or [4]	<u>Previous day</u>
RIGHT or [6]	<u>Next day</u>
UP or [2]	<u>Previous month</u>
DOWN or [8]	<u>Next month</u>
[7]	<u>Previous week</u>
[9]	<u>Next week</u>
[*] or [A]	<u>Previous year</u>
[#] or [B]	<u>Next year</u>
[1] or [C]	<u>Enter Year</u> Same as Enter Year command
[3] or [D]	<u>Enter Year Before Common Era. (Common date only)</u> Same as Enter Year B.C command
[5]	<u>Today</u> Go to current date
[0]	<u>Default date</u> Go to a date effective before calling Date Set screen
FIRE	<u>OK</u> Show Date View screen for selected date

Date Set Commands

The following commands can be activated from Date Set screen

Command	Description
OK	Show Date View screen for selected date, (accept selected date as the last Julian if called from Settings)
Enter Year	Brings a separate screen for entering year. <i>Only digits are accepted</i> , therefore a year can't be entered as a Hebrew numeral, even if <i>native</i> format is set for Hebrew Years (see <u>Settings</u>). For a common date, Common Era (C.E) is assumed
Enter Year B.C. (Common date only)	Enter A Year Before Common Era (B.C.E), Only digits can be entered.

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Today	Go to current date
Default Date	Go to a date effective before calling Date Set screen
Help	Show help for Date View page
Cancel	Return to previous screen without changing date

The application accepts dates in a range from 1 Tishri 1 to 29 Elul 5000000, which corresponds to 7 October 3761 B.C.E. Julian to 1 November 4996299 C.E. Gregorian. Please note that year 0 is never accepted since (as mentioned before) year 1 B.C.E. is followed by year 1 C.E.

Using a pointer device (stylus)

Touchscreen devices usually come with a pointer device(stylus) and often don't have a T9 style keypad, which might complicate the control Date View , Date Set and Event Date Setup screens. In fact, you can control these screens through menu, but it is not as convenient as with keypad.

Starting with v 1.1 the application allows controlling the above mentioned screen also with a stylus, however this does not exclude the use of keypad. For example, some stylus devices have Game Keys that can be used along with a stylus. The application automatically recognises a touchscreen device and shows Pointer Navigation help before common help information, if relevant.

The use of stylus to be rather intuitive. In order to advance to *next* day/month/year, you just tap the *right* side of day/month/year respectively on the screen. Similarly, in order to get to *previous* day/month/year you tap the *left* side of day/month/year resp. In Date View screen you can navigate by Hebrew or secular date, depending on which day, month, or year is tapped.

Tapping *day of week*(DOW) or other "hot spots" is processed specifically to the screen displayed, as the following:

Screen-specific pointer commands		
Screen	Tapped field	Command
Date View (calendar)	DOW secular, left	Past holidays/events
	DOW secular, right	Set secular date
	DOW Hebrew, left	Set Hebrew date
	DOW Hebrew, right	Coming holidays/events
	DOW, middle of screen	Today
	YEAR, middle of screen	Settings
Date Set	DOW, left	Set year (B.C.E. for secular date)
	DOW, right	Set year (C.E. for secular date)
	DOW, middle of screen	Today
	MONTH, middle of screen	Default date
	YEAR, middle of screen	Set year (C.E. for secular date)
Event Setup	NUMBER OF DAYS, left	Increment number of days
	NUMBER OF DAYS, right	Decrement number of days

Taping other spots shows Help screen.

Settings Screen

Settings Screen is a actually front end to various other panels, that provide custom features.
Top bring up Settings screen press [1] or select Settings command from Date View screen.

To change an item press FIRE key or enter Select command. Some item (Location, Navigate, List) change value "on fly" others will bring up a separate screen.

Settings Screen contains the following items:

Name	Description
Location	Israel or Diaspora. Choice of location affects duration of holidays and sedra scheme. In Israel some holidays are shorter than in Diaspora (that makes sense: major holidays are official non-working days in Israel, but not in Diaspora :))
End Julian	The last day of Julian Calendar. By default it is 4Oct 1582 – the last day of Julian Calendar in the first countries adopted Gregorian calendar. For an English-speaking country you might prefer 2 Sept 1752. Pressing FIRE for this line brings up <u>Set Date screen</u> same as used with Date View.
Navigate	Hebrew or Common. Specifies default calendar used for <u>Date View</u> navigation
Hebrew Days	Specifies the way Hebrew days of month are displayed: Numeric – use common ("Arabic") numerals: 1, 2 ... 30. Native – use Hebrew traditional numerals where letters are used to represent numbers. <i>A non-Hebrew release uses transliteration</i> , for the details refer to <u>Representing Hebrew numerals in native format</u> . By default, Native is accepted by the Hebrew release, the others will take Numeric.
Hebrew Years (Hebrew release only)	Specifies the way Hebrew years are displayed Numeric – use common numeric representation (like 5765) Native – use Hebrew numerals for years <i>Numeric is the only available choice for a non-Hebrew release.</i> Hebrew release users might refer to <u>Representing Hebrew numerals in native format</u> for more information.
List	Specifies which information is shown in the list of Coming or Past events: Date – event common date. Interval – number of days between the event date and view date separated with > for coming events. or < for past events
Options	General options: O Show Omer/3X Highlight Omer or 3week days in <u>Date View screen</u> , show Omer and 3W day numbers in <u>Date View information bar</u>

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	<p>S Show Sedrot Show Torah readings for each Shabbat</p> <p>H Show Shabbat show special Shabbat names</p> <p>M Month Numbers show month numbers (e.g. Kislev [9]) in <u>Date Set</u> screen</p> <p>A Auto-Page turn page automatically in Date View screen, as explained in <u>Multiple pages and Auto-Turn Page</u></p> <p>Pressing FIRE for Options brings a list of options where you need to tick options you wish to enable. Enter Close command for getting back to Settings</p>
Holidays	Show Holidays Setup screen to assign display options for Holidays
Custom Events	Show Custom Events Screen to maintain the list of custom events
Close	Accept new settings and get back to Date View screen.

Holidays and Custom Events

I use term *events* as a common name for *holidays* and *custom events*.

Event Display Options

Event display options control the presence and appearance of an event. The following options are supported

Acronym	Name	If enabled...
L	List	... the event appears in a list of coming and past event
D	Display	... the event is show at Date View page for appropriate date
H	Highlight	... the date view page for the event is show in a different colour
E	Erev (Eve)	... the event is appears for the preceding date as Erev (e.g. 'Erev Rosh HaShanah' at 29 of Adar/AdarB page)
K	Katan	.. the event is celebrated twice in a leap year, as Katan (Small) in AdarA and "Full-Size" in AdarB (appears only for AdarB events). See <u>Adar Bet Events</u> for explanations.

Comments:

1. Highlight and Erev imply Display
2. An event never appears as 'Erev' in a list of Coming/Past events.
3. An event listed as Erev does not cause page highlighting, but its name is typed highlighted, if Highlight is enabled.
4. A Katan Event is not highlighted, but other settings apply. In particular List enables listing Katan Event in Coming/Past, while enabling Erev will produce a line like 'Erev MyEvent Katan' for the date preceding Katan event.

Customising Holidays

Display options is the only customised feature for holidays. You can select holidays to be listed for Coming/Past events, holidays to appear on Date View screens, Date View highlighting and other. See [Event Display Options](#) for the details.

To specify display options for a holiday:

1. From Date View screen enter *Settings* command (or press [1] key)
2. In the list of settings select *Holidays* and press FIRE key. This brings up the list of holidays, where each holiday is shown with initial letters of enabled display options
3. Select a holiday you wish to set up and press FIRE key get the list of options.
4. Press FIRE key to enable/disable highlighted option in the list, enter *Close* when done – the new options are now effective. *Please note, that Display will be actually disabled only in case both Highlight and Erev are also disabled.*

Options for holiday name **Rosh Chod.** (short for Rosh Chodesh – start of month) apply to start of each month. If enabled, you get events like 'Rosh Chodesh <month name>' listed / displayed for 1st of each Hebrew month.

Custom Events

For a custom event you need to specify:

- Event Name (up to 20 chars) used for Date View page
- Event Short Name – used for event lists and compound names (i.e with *Erev* and/or *Katan*)
- Event Date: Hebrew day and month, number of days (1 by default)
- Display options, see [Event Display Options](#)

To maintain custom events:

1. From Date View screen enter *Settings* command (or press [1] key)
2. In the list of settings select *Custom events* and press FIRE key. This brings up the list of custom events

The list of custom events contains custom event short names with initial letters of enabled display options. The last (or the only) line named **New Event ...** You can have up to 128 custom events.

To add or edit an event, select an event (*New Event ...* for adding) and press FIRE to get Event Setup screen. You can go straight to event options by entering *Set Options* command. To delete an event enter *Delete* command.

Event Setup screen shows event names, event date and options. Use UP and DOWN key to navigate between event names and options (some devices might have it in a different way).

Default display options of a custom event are Listed, Displayed. To edit display options enter *Set Options* command. This brings up *Display Options setup* screen similar to the one used for [customising holidays](#) .

Event date is initially set to the day and month of the *active (last viewed) date* – the date shown on Date View

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Screen before Settings command was entered. To change the event date enter *Set Date* command – this brings up **Event Date Setup** screen.

The following keys are used with Event Date Setup screen:

Key (-s)	Action
LEFT or [4]	Previous day of month
RIGHT or [6]	Next day of month
UP or [2]	Previous month
DOWN or [8]	Next month
[*] or [A]	Reduce number of days
[#] or [B]	Increase number of days
[1] or [C]	Get day and month from the active (last viewed) date
[3] or [D]	Get day and month from today
[7]	Go 7 days back
[9]	Go 7 days forward

Comments:

1. Adar events are celebrated in AdarA during leap years. For AdarB events see [Adar Bet Events](#)
2. It is assumed that Cheshvan, Kislev and Adar have 30 days. In years where a month has 29 days, the event assigned to 30th of the month takes place at 29th of the month
3. Number of days is normally shown only of more that one. However, with a touchscreen device number of days always appears, so that you can set it with a stylus, see [Using a pointer device \(stylus\)](#) .

Adar Bet Events

Everybody knows that Purim is a lucky holiday. But someone might not realise that it also has a lucky date: 14 of Adar Bet. Since non-leap years don't have AdarB, the holiday is celebrated at 14 of Adar. But in a leap year Purim is celebrated twice: as Purim Katan ("Small Purim") at 14 of AdarA, and "main" Purim at 14 of AdarB !

If you are lucky enough to be born or married in AdarB, you can follow Purim tradition and celebrate your remarkable date twice in a leap year. To do that you set up a custom event for AdarB, and enable Katan as display option (see [Event Display Options](#))

