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Leave Calculation Methods

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Illustrated examples

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## 1) Overview of leave setting

For individual employee, as their join date and length of service may differ, we need to determine (especially for Annual Leave):
a) how to calculate his leave entitlement in each calendar year
b) how to calculate his leave entitlement in each calendar month.

And in general, we also need to set:
c) the company's policy of Leave Entitlement (for Annual Leave, Sick Leave...)

## 2) Features/Settings related to leave calculation

a) Tools > Company Profile > Basic Information > Leave Information

This setting will determine total leave entitlement for an employee in each calendar year.
Example: According to ABC Company policy of Annual Leave entitlement,
1st year of service will entitle for: 12 days
$2^{\text {nd }}$ year of service will entitle for: 14 days
$3^{\text {rd }}$ year of service will entitle for: 16 days (and subsequent years)
Mr. Peter join the company on 1 April 2019
His annual leave entitlement according to calendar year need to be determined:
Year 2019: ? Days
Year 2020: ? Days
Year 2021: ? Days
Year 2022: ? Days

| Feature | Purpose | Options | Effects |
| :--- | :--- | :--- | :--- |
| Leave Cutoff Day | To determine if the month of join <br> date to be included. <br> Applicable only when Leave <br> Calculation Method is Month <br> Inclusive. | $0-31$ | When 15 is assigned: <br> - when join date is on or before 15 th then that month will be included as one full month; <br> - when join date is after $15^{\text {th }}$ then that month will be excluded. |
| Leave's Roundup | Minimum unit of measurement for <br> leave entitlement in each <br> calendar year. | - Hourly <br> - Half Day <br> - Full Day | The final figure (in 5 decimal points) will be rounded up as follow: <br> Hourly: 8.41235 days will be expressed as 8 Days and 3 Hours (assuming 8 working hours per day: $0.41235 \times 8=3.2988$ <br> hour) <br> Fulf Day: $8.10000 \sim 8.59999$ will round up to 8.5 Days. $8.60000 \sim 9.09999$ will round up to 9.0 Days. |


| Feature | Purpose | Options | Effects |
| :---: | :---: | :---: | :---: |
| Leave Calculation Method | To calculate total leave entitlement in each calendar year | - Days <br> - Month Inclusive <br> - Month Proportion | General Formula: is tied to length of service. So usually leave entitlement in each calendar year is the total of 2 parts. Part 1 is leave entitlement before join date (LEb) and part 2 is leave entitlement after join date (LEa). <br> For example: <br> Peter join on 1 Apr 2019, his first year of service will be crossing 2019 and 2020 (1/4/2019 ~ 31/3/2020) <br> For 2019: LEb $=0$ <br> $L E a=1$ st part of his $1{ }^{\text {st }}$ year entitlement. <br> For 2020: LEb $=2^{\text {nd }}$ part of his $1^{\text {st }}$ year entitlement <br> $L E a=1^{\text {st }}$ part of his $2^{\text {nd }}$ year entitlement <br> So, formula for leave entitlement of a calendar year (LE): $\quad \mathrm{LE}=\mathrm{LEb}+\mathrm{LE} a$ <br> Days: To calculate LEb and LEa based on number of days respectively. <br> Example: Join date is $1 / 4 / 2019$ <br> For 2019: LEb = 0 <br> $L E a=275 / 365 \times 1^{\text {st }}$ year entitlement. <br> For 2020: LEb $=91 / 366 \times 1^{\text {st }}$ year entitlement. <br> $L E a=275 / 366 \times 2^{\text {nd }}$ year entitlement <br> Month Inclusive: To calculate LEb and LEa based on number of months (full month, no decimal point) respectively. <br> Example: Join date is 10/4/2019 <br> For 2019: LEb $=0$ <br> LEa $=9 / 12 \times 1^{\text {st }}$ year entitlement. <br> For 2020: LEb $=3 / 12 \times 1^{\text {st }}$ year entitlement. <br> $L E a=9 / 12 \times 2^{\text {nd }}$ year entitlement <br> Month Proportion: To calculate LEb and LEa based on number of months (with 2 decimal points) respectively. <br> Example: Join date is $10 / 4 / 2019 \quad 1 \sim 9$ Apr $=9$ days $=9 / 30=0.3$ month $10-30 \mathrm{Apr}=21 \text { days }=21 / 30=0.7 \text { month }$ <br> For 2019: LEb = 0 <br> $L E a=9.70 / 12 \times 1^{\text {st }}$ year entitlement. <br> For 2020: LEb $=3.30 / 12 \times 1^{\text {st }}$ year entitlement. <br> $L E a=9.70 / 12 \times 2^{\text {nd }}$ year entitlement |
| Calculate Year of Service By | To determine length of service according to employee's join/confirm date. <br> Applicable only for those Leave <br> Type whose Entitlement <br> Calculation Method is '...by <br> Employee's Join/Confirm Date'. <br> Not applicable for those Leave <br> Type whose Entitlement <br> Calculation Method is '...by <br> Calendar Year'. | - Join Date <br> - Confirm Date | a) Be cautious when choose to base on Confirm Date as any period before confirmation date will be counted. <br> b) In the following illustrations, all examples will base on Join Date. However its calculation method is also applicable to 'base on Confirm Date' as the difference is only on the date. <br> c) For those Leave Type whose Entitlement Calculation Method is '...by Calendar Year', the Join Date is assumed to be on $1^{\text {st }}$ January (means enjoying full year entitlement) |

Illustrated Example (calculation of leave entitlement for calendar years 2019 and 2020)
Join Date: 15 March 2019

Company annual leave entitlement policy: $1^{\text {st }}$ year of service $=12$ days. $2^{\text {nd }}$ year of service $=14$ days
Working hour per day $=8$ hours

| Leave Calculation Method | Calculate Year of service by: Join Date (15 March) |  | Calculate Year of service by: Calendar Year (1st Jan) |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Year 2019 (365 Days) | Year 2020 (366 Days) | Year 2019 (365 Days) | Year 2020 (366 Days) |
| Days | $\begin{aligned} & \mathrm{LEb}=0 \text { day } \\ & \mathrm{LEa}=292 / 365 * 12=9.60000 \text { days } \end{aligned}$ <br> Round up Hourly $=9$ days 5 hours <br> Round up Half Day $=10.0$ days <br> Round up Full Day = 10 days | $\begin{aligned} & \mathrm{LEb}=74 / 366 * 12=2.42623 \text { days } \\ & \mathrm{LEa}=292 / 366 * 14=11.16940 \text { days } \end{aligned}$ <br> LE Total 13.59563 days <br> Round up Hourly $=13$ days 5 hours <br> Round up Half Day $=13.5$ days <br> Round up Full Day = 14 days | LEb $=0$ day <br> LEa $=365 / 365 * 12=12$ days <br> Round up Hourly $=12$ days 0 hours <br> Round up Half Day $=12.0$ days <br> Round up Full Day = 12 days | $\begin{aligned} & \text { LEb }=0 \text { day } \\ & \text { LEa }=366 / 366 * 14=14 \text { days } \end{aligned}$ <br> Round up Hourly = 14 days 0 hours <br> Round up Half Day = 14.0 days <br> Round up Full Day = 14 days |
| Month Inclusive (Cutoff day = 15) Thus March is counted as one full month. | $\begin{aligned} & \text { LEb }=0 \text { day } \\ & \text { LEa }=10 / 12 * 12=10.00000 \text { days } \\ & \text { Round up Hourly }=10 \text { days } 0 \text { hours } \\ & \text { Round up Half Day }=10.0 \text { days } \\ & \text { Round up Full Day }=10 \text { days } \end{aligned}$ | $\mathrm{LEb}=2 / 12 * 12=2.00000$ days $\mathrm{LEa}=10 / 12 * 14=11.66667$ days LE Total 13.66667 days <br> Round up Hourly $=13$ days 5 hours Round up Half Day $=14.0$ days Round up Full Day = 14 days | $\begin{aligned} & \mathrm{LEb}=0 \text { day } \\ & \mathrm{LEa}=12 / 12 * 12=12 \text { days } \end{aligned}$ <br> Round up Hourly $=12$ days 0 hours <br> Round up Half Day $=12.0$ days <br> Round up Full Day = 12 days | $\begin{aligned} & \mathrm{LEb}=0 \text { day } \\ & \mathrm{LEa}=12 / 12 * 14=14 \text { days } \end{aligned}$ <br> Round up Hourly $=14$ days 0 hours <br> Round up Half Day $=14.0$ days <br> Round up Full Day = 14 days |
| Month Proportion | $\begin{aligned} & \text { LEb }=0 \text { day } \\ & \begin{aligned} \text { LEa } & =(9+17 / 31) / 12 * 12 \\ & =9.55 / 12 * 12=9.55 \text { days } \end{aligned} \\ & \text { Round up Hourly }=9 \text { days } 4 \text { hours } \\ & \text { Round up Half Day }=9.5 \text { days } \\ & \text { Round up Full Day }=10 \text { days } \end{aligned}$ | $\begin{aligned} \mathrm{LEb} & =(2+14 / 31) / 12 * 12 \\ & =2.45 / 12 * 12=2.45 \text { days } \\ \mathrm{LEa} & =(9+17 / 31) / 12 * 14 \\ & =9.55 / 12 * 14=11.14167 \text { days } \end{aligned}$ <br> LE Total 13.59167 days <br> Round up Hourly $=13$ days 5 hours <br> Round up Half Day $=13.5$ days <br> Round up Full Day = 14 days | $\begin{aligned} & \mathrm{LEb}=0 \text { day } \\ & \mathrm{LEa}=12.00 / 12 * 12=12 \text { days } \end{aligned}$ <br> Round up Hourly = 12 days 0 hours <br> Round up Half Day $=12.0$ days <br> Round up Full Day = 12 days | $\begin{aligned} & \text { LEb }=0 \text { day } \\ & \text { LEa }=12.00 / 12 * 14=14 \text { days } \\ & \text { Round up Hourly }=14 \text { days } 0 \text { hours } \\ & \text { Round up Half Day }=14.0 \text { days } \\ & \text { Round up Full Day }=14 \text { days } \end{aligned}$ |

b) Tools > General Maintenance > Leave Type

To create different types of leave (Annual Leave, Sick Leave, Maternity Leave...) and determine how to calculate leave entitlement for each calendar month.

Note: the following example use Leave Calculation Method = Days, and Rounding to Half Day (refer to Illustrated Example in part 2a.)

| Feature | Purpose | Options | Effects | xample |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Entitlement Calculation Method | To determine how to calculate leave entitlement for each calendar month | - Yearly Leave by Employee's Join/Confirm Date | Number of leave (days) can be taken is not limited by calendar month. The employee can utilize all leave entitlement for that calendar year in any month. (The calculation of total leave entitlement for each calendar year is to base on Join/Confirm date as per Employee Maintenance.) <br> Example: <br> Join Date $=15$ March 2019 <br> LE 2019 = 10.0 Days <br> LE $2020=13.5$ Days |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Jan'19 <br> 0 | Feb'19 | Mar'19 | Apr'19 | May'19 | Jun'19 | Jul'19 | $\frac{\text { Aug'19 }}{\text { days }}$ | Sep'19 | Oct19 | Nov'19 | Dec'19 |
|  | Rounding method is 'Round Down': |  | Jan'20 | Feb'20 | Mar'20 | Apr'20 | May'20 | Jun'20 | Jul'20 | Aug'20 | Sep'20 | Oct'20 | Nov'20 | Dec'20 |
|  | Rounding to: <br> Hourly: |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Half Day: <br> 1.00000~1.49999 will round to 1.0 Day. <br> 1.50000~1.99999 will round to 1.5 Days <br> Full Day: |  | - Yearly Leave by Calendar Year | Number of leave (days) can be taken is not limited by calendar month. The employee can utilize all leave entitlement for that calendar year in any month. (Enjoy full entitlement as calculation of total leave entitlement for each calendar year is to base on Join/Confirm date $=1$ st Jan.) <br> Example: <br> Join Date (is taken to be on ${ }^{\text {st }}$ Jan) LE $2019=12.0$ Days LE $2020=14.0$ Days |  |  |  |  |  |  |  |  |  |  |  |
|  | $2.00000 \sim 2.99999$ will round to 2 Days | Recommended for Sick Leave | Jan'19 <br> 0 | $\begin{gathered} \text { Feb'19 } \\ \hline 0 \\ \hline \end{gathered}$ | Mar'19 | Apr'19 | May'19 | Jun'19 | $\begin{array}{r} \text { Jul'19 } \\ \quad 12 . \mathrm{C} \\ \hline \end{array}$ | $\begin{aligned} & \text { Aug'19 } \\ & \hline \text { days } \end{aligned}$ | Sep'19 |  |  | Dec'19 |
|  |  |  | Jan'20 | Feb'20 | Mar'20 | Apr'20 | May'20 | Jun'20 | Jul'20 | Aug'20 | Sep'20 | Oct'20 | Nov'20 | Dec'20 |
|  |  |  | 14.0 days |  |  |  |  |  |  |  |  |  |  |  |

Options $\quad$ Effects / Examp

Number of accumulative leave (days) can be taken is limited by calendar month (delayed by 1 month). The employee can only utilize accumulative leave entitlement as at current calendar month. (The calculation of total leave entitlement for each calendar year is to base on Join/Confirm date as per Employee Maintenance.)

Example:
Join Date $=15$ March 2019 LE 2019 = 10.0 Days LE $2020=13.5$ Days

- Earn Leave
by Employee's Join/Confirm Date

| Jan'19 | Feb'19 | Mar'19 | Apr'19 | May'19 | Jun'19 | Jul'19 | Aug'19 | Sep'19 | Oct'19 | Nov'19 | Dec'19 | Jan'20 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | 0 | 0.00 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | $* *$ |


| Jan'20 | Feb'20 | Mar'20 | Apr'20 | May'20 | Jun'20 | Jul'20 | Aug'20 | Sep'20 | Oct'20 | Nov'20 | Dec'20 | Jan'21 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $* *$ | 1.0 | 2.0 | 3.0 | 4.5 | 5.5 | 6.5 | 7.5 | 9.0 | 10.0 | 11.0 | 12.0 | $\star *$ |

Calculation $=($ No of accumulated month -1$) /$ Total effective month * LE
For July $2019=(5-1) / 10 * 10=4.0$ days
For Mar $2020=(3-1) / 12 * 13.5=2.25=2.0$ Days
**Jan $2020=10.0-9.0=1.0$ Days, and **Jan2021 = 13.5-12.0 = 1.5 Days will be brought forward (if the
Employee Group > Leave Setting allows 'BF Days'.
Round down to Half Day: 1.00000~1.49999 will round to 1.0 Day. 1.50000~1.99999 will round to 1.5 Days

Number of accumulative leave (days) can be taken is limited by calendar month (delayed by 1 month). The employee can only utilize accumulative leave entitlement as at current calendar month. (Enjoy full entitlement as calculation of total leave entitlement for each calendar year is to base on Join/Confirm date $=1$ st Jan .)

## Example:

Join Date (is taken to be on 1 st Jan) LE $2019=12.0$ Days LE $2020=14.0$ Days

| Jan'19 | Feb'19 | Mar'19 | Apr'19 | May'19 | Jun'19 | Jul'19 | Aug'19 | Sep'19 | Oct'19 | Nov'19 | Dec'19 | Jan'20 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | 0 | 0 | 10 | 20 | 35 | 45 | 60 | 70 | 80 | 95 | 105 | $* *$ |

Earn Leave
by Calendar Year

| Jan'20 | Feb'20 | Mar'20 | Apr'20 | May'20 | Jun'20 | Jul'20 | Aug'20 | Sep'20 | Oct'20 | Nov'20 | Dec'20 | Jan'21 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $* *$ | 1.0 | 2.0 | 3.5 | 4.5 | 5.5 | 7.0 | 8.0 | 9.0 | 10.5 | 11.5 | 12.5 | $* *$ |

Calculation $=($ No of accumulated month -1$) /$ Total effective month * LE
For July $2019=(5-1) / 10 * 12=4.8=4.5$ days
For Mar $2020=(3-1) / 12 * 14=2.33333=2.0$ Days
${ }^{* *} J a n 2020=12.0-10.5=1.5$ Days, and ${ }^{* *} J a n 2021=14.0-12.5=1.5$ Days will be brought forward (if the Employee Group > Leave Setting allows 'BF Days'.
Round down to Half Day: 1.00000~1.49999 will round to 1.0 Day. 1.50000~1.99999 will round to 1.5 Days
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| Options | Effects | Example |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - Advanced Earn Leave by Employee's Join/Confirm Date <br> Recommended for Annual Leave | Number of accumulative leave (days) can be taken is limited by calendar month. The employee can only utilize accumulative leave entitlement as at current calendar month. (The calculation of total leave entitlement for each calendar year is to base on Join/Confirm date as per Employee Maintenance.) <br> Example: $\overline{\text { Join Date }}=15 \text { March } 2019 \text { LE 2019 = 10.0 Days LE } 2020=13.5 \text { Days }$ |  |  |  |  |  |  |  |  |  |  |  |
|  | Jan'19 <br> 0 | Feb'19 | Mar'19 | Apr ${ }^{\text {r }}$ (19 | $\frac{\text { May'19 }}{}{ }^{\text {² }}$ | Jun'19 4.0 | $\frac{\mathrm{Jul}}{} \mathrm{l}^{19} 9$ | $\frac{\text { Aug'19 }}{6.0}$ | Sep'19 | Oct'19 | $\frac{\text { Nov'19 }}{} 9.0$ | Dec'19 <br> 10.0 |
|  | $\begin{array}{\|c} \hline \text { Jan'20 } \\ \hline 1.0 \\ \hline \end{array}$ | Feb'20 | $\frac{\text { Mar'20 }}{3.0}$ | Apr'20 <br> 4.5 | $\frac{\text { May'20 }}{5.5}$ | Jun'20 <br> 6.5 | $\frac{\mathrm{Jul}}{} / 20$ | $\frac{\text { Aug'20 }}{9.0}$ | $\frac{\text { Sep'20 }}{10.0}$ | Oct'20 | $\frac{\text { Nov'20 }}{12.0}$ | $\frac{\text { Dec'20 }}{13.5}$ |
|  | ```Calculation = No of accumulated month / Total effective month * LE For July 2019=5/10* 10=5.0 days For Mar 2020=3/12* 13.5 = 3.375 = 3.0 Days \bulletRound down to Haf Day: 1.00000~1.49999 will round to 1.0 Day. 1.50000~1.99999 will round to 1.5 Days``` |  |  |  |  |  |  |  |  |  |  |  |
| - Advanced Earn Leave by Calendar Year | Number of accumulative leave (days) can be taken is limited by calendar month. The employee can only utilize accumulative leave entitlement as at current calendar month. (Enjoy full entitlement as calculation of total leave entitlement for each calendar year is to base on Join/Confirm date $=1$ st Jan.) <br> Example: <br> Join Date (is taken to be on $1^{\text {st }}$ Jan) LE 2019 $=12.0$ Days LE 2020 $=14.0$ Days |  |  |  |  |  |  |  |  |  |  |  |
|  | Jan'19 <br> 0 | Feb'19 | Mar'19 1.0 | Apr ${ }^{\prime} 19$ <br> 2.0 | May'19 3.5 | Jun'19 4.5 | Jul'19 <br> 6.0 | Aug'19 7.0 | Sep'19 | Oct'19 | Nov'19 <br> 10.5 | Dec'19 <br> 12 |
|  | Jan'20 | Feb'20 | Mar'20 |  |  |  | Jul'20 |  | Sep'20 | Oct20 | Nov'20 | Dec'20 |
|  | 1.0 | 2.0 | 3.5 | 4.5 | 5.5 | 7.0 | 8.0 | 9.0 | 10.5 | 11.5 | 12.5 | 14 |
|  | ```Calculation = No of accumulated month / Total effective month * LE For July 2019=5 / 10* 12=6.0 days For Mar 2020=3/12* 14=3.5=3.5 Days \bulletRound down to Half Day: 1.00000~1.49999 will round to 1.0 Day. 1.50000~1.99999 will round to 1.5 Days``` |  |  |  |  |  |  |  |  |  |  |  |

c) Tools > General Maintenance > Employee Group > Add New

To create Employee Group and set company's policy on leave entitlement:
Example 1: According to ABC Company policy of Annual Leave entitlement, 1st year of service will entitle for: 12 days
$2^{\text {nd }}$ year of service will entitle for: 14 days
$3^{\text {rd }}$ year of service (and subsequent years) will entitle for: 16 days
Example 2: According to ABC Company policy of Sick Leave entitlement, 1 st \& $2^{\text {nd }}$ year of service will entitle for: 14 days each calendar year $3^{\text {rd }}$ to $5^{\text {th }}$ year of service will entitle for: 18 days each calendar year $6^{\text {th }}$ year of service (and onwards) will entitle for: 22 days each calendar year

