## Calculator List

This document should be read in conjunction with the calculator section of "The conduct of IB Diploma Programme examinations" document and other information available on the Programme Resource Centre. It provides **examples** of calculators which are recommended for use in IB examinations and those which are prohibited. This list will be updated as and when necessary. It should be noted that these are not definitive lists and teachers should check other models against the information in "The conduct of IB Diploma Programme examinations" document. Schools should also ensure that all calculators used in examinations comply with the regulations.

## Recommended calculators

The following models meet the minimum requirements for mathematics subjects and have updated and time-saving functionalities not found on other models.

<table>
<tr><td rowspan="6">Texas Instruments</td><td>TI 84 Plus – all models</td><td>TI 83 Plus</td><td></td></tr>
<tr><td>TI Nspire (non-CAS), with 84 faceplate</td><td>TI 83 Plus silver edition</td><td></td></tr>
<tr><td colspan="2">TI-Nspire (non-CAS models)<br>• TI-Nspire CX II / CX II-T (OS version 5.0 or higher)<br>• TI-Nspire CX (OS version 4.5.1)<br>• TI-Npsire (OS version 3.9)</td><td rowspan="2">All TI-Nspire models must be updated to the latest Operating System (OS) as indicated.<br>All TI-Nspire models must be placed in "Press-to-Test" mode with the correct features blocked (see list below).</td></tr>
<tr><td colspan="2">TI-Nspire (selected CAS models)<br>with CAS mode disabled<br>• TI-Nspire CX II CAS (OS version 5.0 or higher)<br>• TI-Nspire CX II-T CAS (OS version 5.0 or higher)<br>• TI-Nspire CX II-C CAS (OS version 5.0 or higher)</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Hewlett Packard</td><td colspan="3">HP Prime updated to the latest firmware in "Exam Mode", with the correct features blocked (see list below)</td></tr>
<tr><td rowspan="7">Casio</td><td>FX 9750G Plus or GII</td><td>FX 1.0 Plus</td><td></td></tr>
<tr><td>CFX 9850 Plus</td><td>Graph 35 Plus / 35+E / 35+E II</td><td></td></tr>
<tr><td>CFX 9950 Plus</td><td>Graph 65 Plus</td><td></td></tr>
<tr><td>FX 9860G /FX 9860G SD /FX 9860G AU</td><td>Graph 85 series</td><td></td></tr>
<tr><td colspan="3">FX 9860GII / FX 9860GII SD / FX 9860G AU PLUS updated to the latest operating system for IB examinations in "Examination Mode"</td></tr>
<tr><td colspan="2">Graph 75 / Graph 95 updated to the latest operating system for IB examinations in "Examination Mode"</td><td>Graph 90+E,<br>in "Examination Mode"</td></tr>
<tr><td colspan="2">FX CG10/20 updated to the latest operating system for IB examinations in "Examination Mode"</td><td>FX CG50,<br>in "Examination Mode"</td></tr>
</table>

See "Necessary actions with recommended calculators" below for guidance on ensuring these recommended calculators meet requirements.

## Prohibited calculators

The following models are not allowed in examinations under any circumstances.

<table>
<tr><td rowspan="3">Texas Instruments</td><td>TI Voyage 200 (all versions)</td><td>TI 89 (all versions)</td></tr>
<tr><td>TI 92 (all versions)</td><td>Older CAS models:<br>• TI-Nspire CX CAS<br>• TI-Nspire CAS</td></tr>
<tr><td colspan="2">TI-Nspire models that are not updated to the latest operating system</td></tr>
<tr><td>Hewlett Packard</td><td colspan="2">HP 38-95 (all versions)</td></tr>
<tr><td rowspan="5">Casio</td><td>Classpad (all versions) / FX CG500</td><td>Graph 100</td></tr>
<tr><td>FX 2.0 (all versions)</td><td>FX 9970 (all versions)</td></tr>
<tr><td colspan="2">FX 9860GII / FX 9860GII SD / FX 9860G AU PLUS not updated to the latest operating system</td></tr>
<tr><td colspan="2">Graph 75 / Graph 95 not updated to the latest operating system</td></tr>
<tr><td colspan="2">CG series - FXCG10/20 not updated to the latest operating system</td></tr>
</table>

**Notes:**

- Any devices with unrestricted/candidate accessible WiFi functionality are not permitted.
- Other calculators which have features that do not appear on any of the recommended models **and/or** have functionality that is exclusive to the prohibited calculators (and not blocked during the examination) are not allowed.
- Candidates may not use or store data/notes, programs or flash (ROM) applications (Apps) in their calculators that may assist them in an examination by removing the need to recall facts or formulae.

## Extract from "The conduct of IB Diploma Programme examinations" document

Calculators of the types indicated as suitable are allowed only in the subjects listed in the table below.

| Subjects | Calculators |
|---|---|
| Business management<br>Environmental systems and societies | A four-function calculator, scientific calculator or GDC is required for all examinations. |
| Economics HL Paper 3 | While all questions requiring a calculator can be answered fully using a four function (plus, minus, multiply, divide) calculator, graphic display calculators (GDCs) are allowed during the examination. The graphing functions on these calculators may assist students and it is therefore recommended that all students are familiar with the use of GDCs. |
| Biology<br>Chemistry<br>Design technology<br>Physics<br>Sports, exercise and health science | Calculators are not allowed on paper 1. |
| | On paper 2 and paper 3, a calculator with the following minimum functionalities is required (a GDC is recommended):<br>• decimal logarithms<br>• values of $x^y$ and $x^{1/y}$<br>• value of π (pi)<br>• trigonometric functions<br>• inverse trigonometric functions<br>• natural logarithms<br>• values of $e^x$<br>• scientific notation |

| Subjects | Calculators |
|---|---|
| Mathematical studies SL<br>Further mathematics HL | A GDC with the following minimum functionalities is required on all papers:<br>• draw graphs with any viewing window<br>• solve equations numerically<br>• find a numerical derivative at a point<br>• find a numerical definite integral<br>• financial package<br>• add and multiply and find inverse matrices (further mathematics HL only)<br>• find statistical values including:<br>- normal distribution<br>- binomial distribution<br>- Poisson distribution<br>- t-distribution<br>- binomial coefficient $\binom{n}{r}$, nPr<br>- 1 and 2 var stats<br>- chi squared values (including *p* values)<br>Examiners will set questions assuming that all candidates have a GDC with the minimum functionalities listed here. Candidates using only four-function or scientific calculators, or using a less able GDC, will be at a disadvantage. |
| Mathematics SL<br>Mathematics HL | Calculators are not allowed for paper 1. |
| | A GDC with the following minimum functionalities is required on all other papers:<br>• draw graphs with any viewing window<br>• solve equations numerically<br>• find a numerical derivative at a point<br>• find a numerical definite integral<br>• financial package<br>• find statistical values including:<br>- normal distribution<br>- binomial distribution<br>- Poisson distribution<br>- t-distribution<br>- binomial coefficient $\binom{n}{r}$, nPr<br>- 1 and 2 var stats<br>- chi squared values (including *p* values)<br>Examiners will set questions assuming that all candidates have a GDC with the minimum functionalities listed here. Candidates using only four-function or scientific calculators, or using a less able GDC, will be at a disadvantage. |

## Necessary actions with recommended calculators

### Casio

#### FX 9860GII / FX 9860GII SD / FX 9860G AU PLUS / Graph 75 / Graph 95 / FX CG10 / FX CG20 – Operating system download and “Examination Mode” instructions

Follow this link (http://edu.casio.com/ib/index.html) to the Casio website and follow the instructions to install the required operating system for the IB examinations. This link is also to the user manual for the “Examination Mode” functionality which must be engaged immediately before the examination and continue for the duration of the examination.

Note that updating the operating system for the models named “USB POWER GRAPHIC/GRAPHIQUE USB” is sufficient, there is no need to put these into examination mode. However, all memory must be initialized/reset on these models

Please note that the FX CG50 and Graph 90+E already come with an IB approved operating system (3.0) and will not need to be updated. However the latest operating system, 3.20, is available via the link and teachers and students are advised to keep their operating system up to date for device stability and security. As above, the “Examination Mode” functionality must be engaged for the FX CG50 and Graph 90+E immediately before the examination and continue for the duration of the examination.

#### All recommended Casio calculators

Initialize/reset **all** memory.

## HP Prime “Exam Mode” configurations

**Note:** Candidates must upgrade their Prime to the latest firmware to use the “Exam Mode” properly. Primes which have not been updated and put into the correct “Exam Mode” are not allowed in the examinations. Primes must be put into “Exam Mode” immediately before the examination. If done earlier, a candidate must not have access to the calculator between the time it is put into “Exam Mode” and the examination. Further details about “Exam Mode” can be found on the HP website.

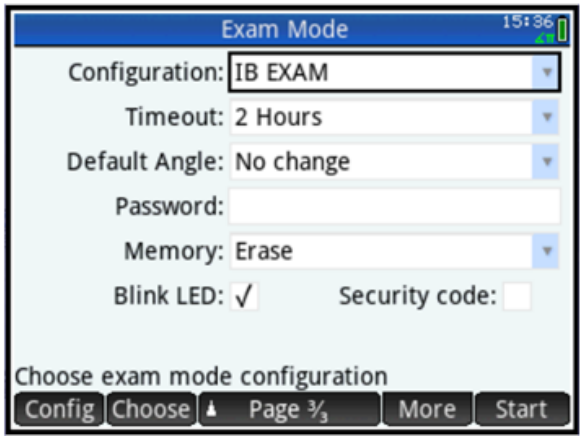
The following options in “Exam Mode” mode must be **ticked**.

- Erase memory:
- Blink LED:

The following options in “Exam Mode” mode must be **ticked** and therefore **blocked**.

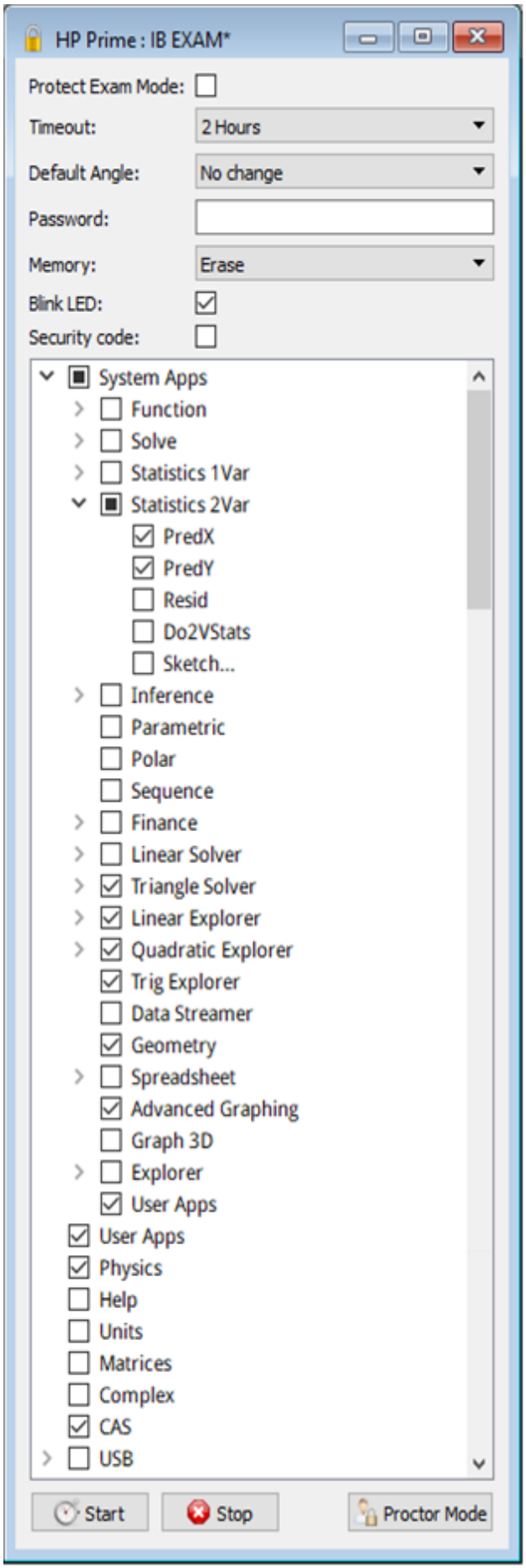
- PredX
- PredY
- Triangle Solver
- Linear Explorer
- Quadratic Explorer
- Trig Explorer
- Geometry
- Advanced Graphing
- User Apps
- Physics
- CAS
- Notes and Programs
- New Notes and Programs
- Vector
  - CROSS
  - DOT

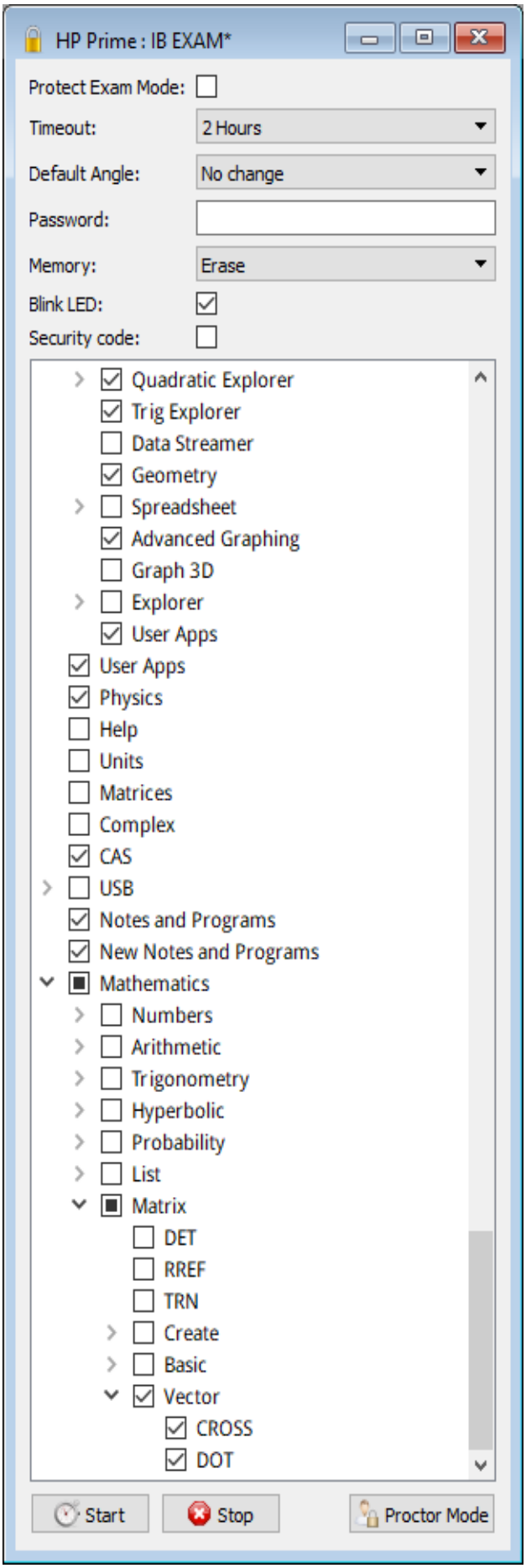
The following screen shots show how to put the Prime into the correct “Exam Mode”.




**Notes:**

- “Timeout” must be set for at least the duration of the examination.
- When put in “Exam Mode”, the default angle setting can be set to “Degrees” or “Radians” depending on candidate preference.


HP Prime : IB EXAM*
Protect Exam Mode:
Timeout:
2 Hours
Default Angle:
No change
Password:
Memory:
Erase
Blink LED:
Security code:
System Apps
Function
Solve
Statistics 1Var
Statistics 2Var
PredX
PredY
Resid
Do2VStats
Sketch...
Inference
Parametric
Polar
Sequence
Finance
Linear Solver
Triangle Solver
Linear Explorer
Quadratic Explorer
Trig Explorer
Data Streamer
Geometry
Spreadsheet
Advanced Graphing
Graph 3D
Explorer
User Apps
User Apps
Physics
Help
Units
Matrices
Complex
CAS
USB
Start
Stop
Proctor Mode


HP Prime : IB EXAM*
Protect Exam Mode:
Timeout:
2 Hours
Default Angle:
No change
Password:
Memory:
Erase
Blink LED:
Security code:
Quadratic Explorer
Trig Explorer
Data Streamer
Geometry
Spreadsheet
Advanced Graphing
Graph 3D
Explorer
User Apps
User Apps
Physics
Help
Units
Matrices
Complex
CAS
USB
Notes and Programs
New Notes and Programs
Mathematics
Numbers
Arithmetic
Trigonometry
Hyperbolic
Probability
List
Matrix
DET
RREF
TRN
Create
Basic
Vector
CROSS
DOT
Start
Stop
Proctor Mode

## TI Nspire / TI Nspire CX "Press to Test" configurations

**Note:** Candidates must upgrade their Nspire to the latest operating system to use the "Press to Test" properly. Nspires which have not been updated and put into the correct "Press to Test" mode are not allowed in the examinations. Nspires must be put into "Press to Test" mode immediately before the examination. If done earlier, a candidate must not have access to the calculator between the time it is put into "Press to Test" mode and the examination. Further details about "Press to Test" can be found on the TI website.

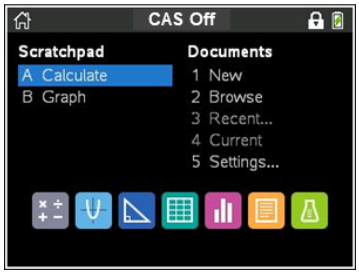
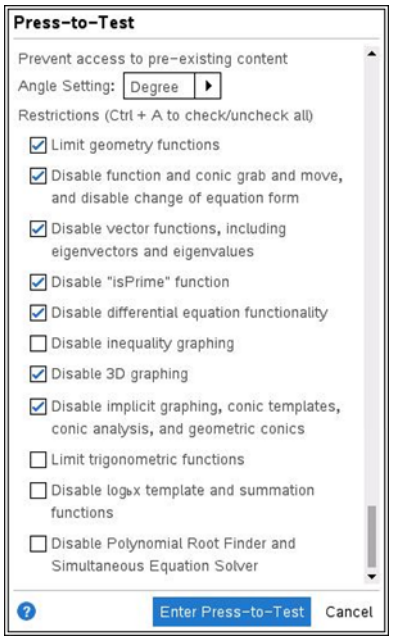
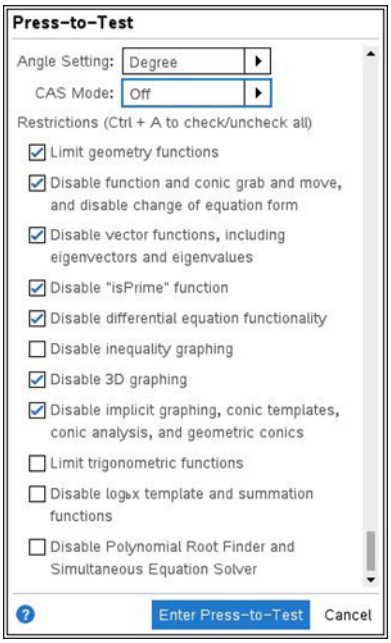
The following options in "Press to Test" mode must be **ticked** and therefore **blocked**.

- Limit geometry functions
- Disable function and conic grab and move, and disable change of equation form
- Disable vector functions, including eigenvectors and eigenvalues
- Disable "isPrime" function
- Disable differential equation functionality
- Disable 3D graphing
- Disable implicit graphing, conic templates, conic analysis, and geometric conics

The following options in "Press to Test" mode must be **unticked** and therefore **allowed**.

- Disable inequality graphing
- Limit trigonometric functions
- Disable $\log_b x$ template and summation functions
- Disable Polynomial Root Finder and Simultaneous Equation Solver

The following screen shots show how to put TI-Nspire calculators into the correct "Press-to-Test" mode.

<table>
<tr><td>TI-Nspire (non-CAS models)<br><br>• TI-Nspire CX II<br>• TI-Nspire CX II-T<br>• TI-Nspire CX<br>• TI-Nspire</td><td>TI-Npire (selected CAS models)<br><u>with CAS Mode off</u><br><br>• TI-Nspire CX II CAS<br>• TI-Nspire CX II-T CAS<br>• TI-Nspire CX II-C CAS</td><td rowspan="2">When complete, Home screens must appear as follows<br><br>TI-Nspire (non-CAS models)<br><br>  <br><br><br>TI-Nspire (selected CAS models)<br><br>  <br><br><br>Screens will vary depending on the selected model</td></tr>
<tr><td>  <br></td><td>  <br></td></tr>
</table>

**Note:** When put in "Press to Test", the angle setting can be set to "Degree" or "Radian" depending on candidate preference.

## TI 83 / TI 84 recommended calculators

1. Reset all RAM memory.

2. Reset Archive Vars (if applicable).

3. Remove all Flash (ROM) applications (Apps) except those listed below, where applicable.

| App Menu Name | Description |
|---|---|
| CBL/CBR | Connectivity/set-up of CBL™ data collection system<br>(Other connectivity Apps for USB-type probes are also acceptable and do not need to be removed.) |
| Chinese | Chinese version of Catalog Help |
| CtlgHelp | Catalog Help provides easy access to calculator function information |
| Dansk | Danish language localizer—this App will translate all prompts, error messages and most functions into Danish |
| Deutsch | Language localizer—this App will translate all prompts, error messages and most functions into German |
| EasyData | Connectivity App for USB-type data collection probes |
| Español | Language localizer—this App will translate all prompts, error messages and most functions into Spanish |
| Finance | Finance operations—part of the Operating System |
| Français | Language localizer—this App will translate all prompts, error messages and most functions into French |
| Italiano | Language localizer—this App will translate all prompts, error messages and most functions into Italian |
| Magyar | Language localizer—this App will translate all prompts, error messages and most functions into Hungarian |
| Nederlan | Language localizer—this App will translate all prompts, error messages and most functions into Dutch |
| Norsk | Language localizer—this App will translate all prompts, error messages and most functions into Norwegian |
| Polski | Language localizer—this App will translate all prompts, error messages and most functions into Polish |
| PolySmlt | Combination of two programs, one that finds polynomial roots and one that finds solutions to systems of equations. This version is an older version than PolySmlt2. |
| PlySmlt2 | Combination of two programs, one that finds polynomial roots and one that finds solutions to systems of equations |
| Portug | Language localizer—this App will translate all prompts, error messages and most functions into Portuguese |
| Suomi | Language localizer—this App will translate all prompts, error messages and most functions into Finnish |
| Svenska | Language localizer—this App will translate all prompts, error messages and most functions into Swedish |