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TECHNICAL REQUESTS, RECOMMENDATIONS, AND CONSIDERATIONS REGARDING PhilGEPS Ref No. 9118248

07 November 2022

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Brgy. Ibabang Dupay, Red-V, Lucena City, Quezon

Regarding the Quotation for the Procurement of Learner's School Identification Card Printing and Services as per PhilGEPS Ref No. 9118248, I, Jeremy Vien G. Arriola — software engineer of the contracted company, Klik-a-snap Photography Services, and in behalf of its' owner — humbly request of the following to either be submitted or complied to, and considered.

Different sections might require the reader to possess knowledge regarding technologies/termonologies used, included, and/or mentioned in this document. Due warning will be given.

An online archive of this document can be seen at the following link:

https://klik-a-snap.github.io/LCNHS/22/11/07/TRRC.pdf

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DEFINITION OF TERMS

The key words **"MUST"**, **"MUST NOT"**, **"REQUIRED"**, **"SHALL"**, **"SHALL NOT"**, **"SHOULD"**, **"SHOULD NOT"**, **"RECOMMENDED"**, **"MAY"**, and **"OPTIONAL"** in this document are to be interpreted as described in RFC 2119 (*https://datatracker.ietf.org/doc/html/rfc2119*).

➢ **MUST** — This word, or the terms **"REQUIRED"** or **"SHALL"**, mean that the definition is an absolute requirement of the specification.

➢ **MUST NOT —** This phrase, or the phrase **"SHALL NOT"**, mean that the definition is an absolute prohibition of the specification.

➢ **SHOULD** — This word, or the adjective **"RECOMMENDED"**, mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

➢ **SHOULD NOT** — This phrase, or the phrase **"NOT RECOMMENDED"** mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

As used in this document, the following terms **MUST** have the following meanings (such meanings **MUST** be equally applicable to both the singular and plural forms of the terms defined below, unless explicably mentioned otherwise):

➢ **COMPANY** hereby refers to Klik-a-snap Photography Services, owned by Juvy G. Arriola and established in the Republic of the Philippines — only applicable in singular form

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- ➢ **DEVELOPER** hereby refers to Jeremy Vien G. Arriola, the software engineer of the **COMPANY**, rightful co-owner and manager of the **COMPANY**'s electronic mail address *klik-a-snap@pm.me* and *klik-a-snap@proton.me*, and author of this document — only applicable in singular form; and

- ➢ **SCHOOL** hereby refers to the Lucena City National High School, located at Brgy. Ibabang Dupay, Red-V, Lucena City, Province of Quezon — only applicable in singular form

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QR CODE

Hereunder tackles technical details, requests, recommendations, and considerations to be taken account for regarding the QR code that will be placed in every individual identification card of each students currently enrolled at the **SCHOOL**.

QR CODE DATA

The following section requires the reader to possess some background knowledge regarding popular data interchange file formats.

If the **SCHOOL** were to provide the code for the QR code of each students, the **SCHOOL MUST** provide it in one of the following file formats, and corresponding format and example:

➢ JSON (JavaScript Object Notation), .json

   If this were the chosen medium, the **SCHOOL MUST** submit one *.json* file, containing all of the QR code data for all of the students currently enrolled in the **SCHOOL,** and **MUST** follow the format below:

```
{
  "[Grade No.]": {
    "[Section]": {
      "[LRN]": "[Code]"
    }
  }
}
```

   This example can be seen at this link: https://klik-a-snap.github.io/LCNHS/22/11/07/qr/tpl.json

   Such as that a hypothetical student at Grade *6* in section *"Aguinaldo" with an LRN "123456123456"* and code *"1234"* **MUST** appear as the following:

```
{
  "6": {
    "Aguinaldo": {
      "123456123456": "1234"
    }
  }
}
```

   This example can be seen at the following link: https://klik-a-snap.github.io/LCNHS/22/11/07/qr/ex.json

➢ YAML (Yet Another Markup Language), .yaml

   If this were the chosen medium, the **SCHOOL MUST** submit one *.yaml* file, containing all of the QR code data for all of the students currently enrolled in the **SCHOOL,** and **MUST** follow the format below:

```
"[Grade No.]":
  "[Section]":
    "[LRN]": "[Code]"
```

   This example can be seen at this link: https://klik-a-snap.github.io/LCNHS/22/11/07/qr/tpl.yaml

Such as that a hypothetical student at Grade *6* in section *"Aguinaldo"* with an LRN *"123456123456"* and code *"1234"* **MUST** appear as the following:

```
"6":
  "Aguinaldo":
    "123456123456": "1234"
```

This example can be seen at this link: https://klik-a-snap.github.io/LCNHS/22/11/07/qr/ex.yaml

➢ Or include it in the School Form 1, besides the LRN

This will be described in detail at *School Form 1* Section - Schema.

If the **SCHOOL** could not provide the data for the QR code of each students, there are a multitude of options and their corresponding drawbacks:

➢ Generate QR code using students' information

An example of this option is the following:

[*Grade No.*] - [*Section*] – [*Name*]

Such as that a hypothetical student at Grade *6* in section "*Aguinaldo*", named "*de la Cruz, Juan S.*" **MUST** appear as the following:

6 - *Aguinaldo* - *de la Cruz, Juan S.*

This is convenient for both the **SCHOOL** and the **DEVELOPER** as this information is readily available, and does not require the **SCHOOL** to provide the data to be used for the QR code. However, this option poses a serious security risk on the safety of the people in the **SCHOOL**. If the QR code in the identification card is to be used for authentication — for example, school entry, internal system authentication (computer/server/network access), and the likes — a bad actor can easily replicate this QR code, and commit identity theft.

➢ Generate QR code using students' LRN

This option has the same strengths, drawbacks, and security risks as the option above. However, this is the most **RECOMMENDED** solution, as it is a student's unique identifier, and can be easily checked if enrolled at the **SCHOOL**.

➢ Assign students with pseudorandom QR code

This can be done easily by the **DEVELOPER**. However, this service is not enumerated in the contract signed. But, the **SCHOOL** can now use the QR code to check if the card holder is indeed a student of the **SCHOOL**.
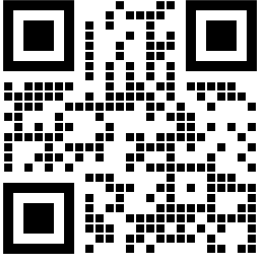
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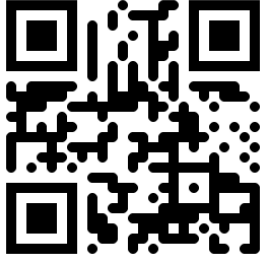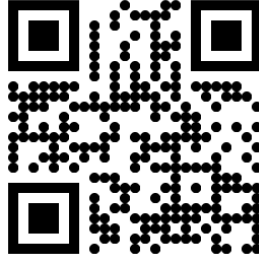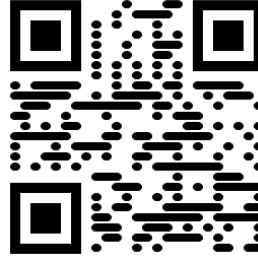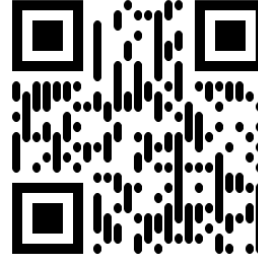
QR CODE SAMPLES

ERROR CORRECTION

Error correction is a vital part of the QR code, as the QR code can be obstructed by either grease, dirt, and whatnot, that can affect its chance of being read properly by the machine. The percentage below are how much of the QR code can be obstructed until it becomes unreadable. The default and recommended error correction is 15%.

The QR code generally becomes bigger, the better its error correction is.

Data	7%	15%	25%	30%
Random 20 character long string *(c29tZXJhbmRvbWNvZGU=)*	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_rc/ ec_07.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_rc/ ec_15.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_rc/ ec_25.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_rc/ ec_30.png
Test LRN *(123456123456)*	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_lrn/ ec_07.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_lrn/ ec_15.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_lrn/ ec_25.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_lrn/ ec_30.png
Grade 6 - Aguinaldo - Juan S. de la Cruz	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_jc/ ec_07.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_jc/ ec_15.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_jc/ ec_25.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_jc/ ec_30.png
Grade 6 - Bonifacio - Maria S. de la Cruz'	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_mc/ ec_07.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_mc/ ec_15.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_mc/ ec_25.png	https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/d_mc/ ec_30.png

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STYLES

A QR code can be styled without compromising its readability. The following are the examples of the availble styles, using a random 20 character long string (*c29tZXJhbmRvbWNvZGU=*) with 15% error correction.

Gapped Squares	Rounded	Circles	Horizontal Bars	Vertical Bars
https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/ style_gapped_square.png	*https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/ style_rounded.png*	*https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/ style_circle.png*	*https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/ style_horizontal_bars.png*	*https://klik-a-snap.github.io/ LCNHS/22/11/07/qr/ style_vertical_bars.png*

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SCHOOL FORM 1

Hereunder tackles technical details, requests, recommendations, and considerations to be taken account for regarding the submission of School Form 1 to the **COMPANY**. The following sections requires the reader to possess some background knowledge regarding spreadsheet programs.

The **SCHOOL MUST** submit to the **COMPANY** the School Form 1 of all of the sections of the **SCHOOL**.

SCHEMA

The key words **"MUST"**, **"MUST NOT"**, **"REQUIRED"**, **"SHALL"**, **"SHALL NOT"**, **"SHOULD"**, **"SHOULD NOT"**, **"RECOMMENDED"**, **"MAY"**, and **"OPTIONAL"** in this document are to be interpreted as described in RFC 2119 (*https://datatracker.ietf.org/doc/html/rfc2119*). Refer to the *Definition of Terms* section of this document for more details.

Failure to comply to the following schema can lead to failure of production of identification cards for the **SCHOOL**, and thus delay the delivery of the services enumerated and promised upon the signed contract.

The School Form 1 **MUST** be submitted in an *.xlsx* file extension (Office Open XML), and **MUST** be named according to the following format:

> [*Grade No.*]-[*Section*].xlsx

Such as that a School Form 1 containing students from a hypothetical Grade 6, section Aguinaldo **MUST** be named as following:

> *06-Aguinaldo.xlsx*

Note that the grade number **MUST** be zero-padded to two characters, and that the section name **MUST NOT** be wholly capitalized, except for characters where it is appropriate to do so.

The spreadsheet **MUST** only contain a single sheet, and be named "Main". For human readability, it is **RECOMMENDED** to center every cells, and to use the font "Arial" with size 10. This will not affect the machine-readability of said school form.

Inside sheet "Main", Cell A1-2 **MUST** contain the strings *"Grade"* and *"Section"* respectively. Said cells are **RECOMMENDED** to be in bold. Cell B1-2 **MUST** contain the grade level of the students enumerated in the School Form 1 and their section, respectively. The grade number **MUST NOT** be zero-padded, and the section name **MUST NOT** be wholly capitalized, except for characters where it is appropriate to do so.

Cell A4 **MUST** contain the string "Male". Cell A-F5 **MUST** contain the strings *"Index", "LRN", "Name", "Address", "Guardian's Name"*, and *"Guardian's Phone Number"* respectively. Cells A4 and A-F5 are **RECOMMENDED** to be in bold, for human readabilty.

In the subsequent rows, the male students in the section **MUST** be sorted in alphabetical order using their last names.

The first column (cell A) **MUST** contain the index number of the student in alphabetical order, starting from the number one(1).

The second column (cell B) **MUST** contain the name of the student in the following format:

[*Last Name*], [*Given Name*] [*Middle Name Initials*]

such as that a hypothetical student named "*Juan S. de la Cruz*" — whereas "*Juan*" is the given name, "*S.*" is the middle name initial, and "*de la Cruz*" is the last name — **MUST** be written as following:

de la Cruz, Juan S.

The name of the student **MUST NOT** be wholly capitalized, except for characters where it is appropriate to do so.

The third column **MUST** contain the physical address of the student, and **SHOULD** follow the following format:

[*House number*], [*Street name*], [*Subdivision / Residential area*], [*Barangay / Administrative district*], [*City / Municipality*]

The address **MUST NOT** be wholly capitalized, except for characters where it is appropriate to do so.

The fourth column **MUST** contain the name of the student's guardian, and **MUST** be written in the same way as the student's name.

The fifth column **MUST** contain the guardian's phone number, which **MUST** be written in one of the following formats:

➢ *0XX XXX XXXX*

➢ *02 XXXX XXXX*; or

➢ *09XX XXX XXXX for mobile phone numbers*.

After enumerating male students in the section, skip 1 row. The cell immediately below the skipped row **MUST** contain the string "Female". Below said row, follow the exact instruction done with the male students, starting from cell A-F5, except applied with female students.

If the data for the QR code will be provided by the **SCHOOL** and the School Form 1 has been chosen to be the medium for the said data, it **MUST** be placed between the LRN and the name of the student, and should have the header *"QR"*.

A template file can be downloaded for the following schemas:

➢ Without QR code data: *https://klik-a-snap.github.io/LCNHS/22/11/07/tpl.yaml*

➢ With QR code data: *https://klik-a-snap.github.io/LCNHS/22/11/07/tpl-qr.yaml*

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This example can be seen at the following link: https://klik-a-snap.github.io/LCNHS/22/11/07/tpl.yaml

Grade	Section
6	Aguinaldo

Male

Index	LRN	Name	Address	Guardian's Name	Guardian's Phone Number
1	123456123456	Surname, First Name M.I.	[House number], [Street name], [Subdivision/ Residential area], [Barangay/Administrative district], [City/Municipality]	Surname, First Name M.I.	09XX XXX XXXX
2	234561234561	de la Cruz, Juan S.	Blk. 10 Lot 20 Mabuhay St., Brgy. Gulang-Gulang, Lucena City, Quezon	Marites B. de la Cruz	0912 345 6789

Female

Index	LRN	Name	Address	Guardian's Name	Guardian's Phone Number
1	345612345612	de la Cruz, Maria S.	Blk. 10 Lot 20 Mabuhay St., Brgy. Gulang-Gulang, Lucena City, Quezon	Marites B. de la Cruz	0912 345 6789

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EXAMPLE (with QR code data)

This example can be seen at the following link: https://klik-a-snap.github.io/LCNHS/22/11/07/tpl-qr.yaml

Grade	Section		Index	LRN	QR	Name	Address	Guardian's Name	Guardian's Phone Number
6	Aguinaldo	**Male**	1	123456123456	c29tZXJhbmRvbWNvZGU=	Surname, First Name M.I.	[House number], [Street name], [Subdivision/ Residential area], [Barangay/Administrative district], [City/Municipality]	Surname, First Name M.I.	09XX XXX XXXX
			2	234561234561	c29tZXJhbmRvbWNvZGU=	de la Cruz, Juan S.	Blk. 10 Lot 20 Mabuhay St., Brgy. Gulang-Gulang, Lucena City, Quezon	Marites B. de la Cruz	0912 345 6789
		Female	1	345612345612	c29tZXJhbmRvbWNvZGU=	de la Cruz, Maria S.	Blk. 10 Lot 20 Mabuhay St., Brgy. Gulang-Gulang, Lucena City, Quezon	Marites B. de la Cruz	0912 345 6789

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