



Central Bank of Azerbaijan Republic

QR Code

Consumer - Presented Mode

Document history

VERSION	DATE	AUTHOR	LOCATION	CHANGES
1.0	25-10-2018	CBAR		The initial version
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1. Introduction

1.1 About

This document contains the requirements for creating QR Code by the Consumer, format and data objects included in the information.

QR Code should be created on the basis of ISO18004 standard.

QR Code created by the Consumer on the basis of this standard should be demonstrated via mobile application of consumer and must be used for the creation of payment transaction by been reading through the QR scanner of other side.

1.2 References

During the preparation of the standard for QR Code, the following sources have been used.

- ISO 18004 – Information technology—Automatic identification and data capture techniques - QR Code, bar code specification
- EMV® QR Code Specification for Payment Systems (EMV QRCPS) Consumer-Presented Mode
- ISO/IEC 13239 Information technologies – Telecommunications and information exchange between systems – High –level data link control (HDLC) procedures)
- ISO 3166 –1 alpha-2 –Codes for the representation of names of countries and their subdivisions— Part 2: Country subdivision code
- RFC 4122 – A Universally Unique Identifier (UUID) URN Namespace <https://tools.ietf.org/html/rfc4122>

1.3 Abbreviations

The following abbreviations are used in the specification:

Table 1.: Abbreviations

CRC	Cyclic Redundancy Check
CPC	Card Processing Center
ID	Identifier of the data object
ISO	International Standards Organization
PIN	Personal identification number
PSP	Payment Service Provider
RFU	Reserve for future use
QR Code	Quick Response Code
UUID	Universally unique identifier
UID	Unique identifier
TIN	Taxpayer Identification Number

1.4 Presence Status of Data objects included in the information by standard

Presence status of Data objects included in the information by standard may get the following values:

- M: Mandatory - shall always be present
- C: Conditional - shall be present under certain conditions
- O: Optional - may be present

1.5 Formats for Data objects included in the information

Every symbol used in the formed QR Code's requisites must be compatible with UTF-8 [Unicode] standard.

The prices to be obtained by Data objects in QR Code created in accordance with standard should belong to one of the following sets of characters:

Character set	Code for character set
a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ç æ ğ İ ö ş ü Ç Θ Ğ İ Ö Ş Ü 0 1 2 3 4 5 6 7 8 9 / - ? : () . , ' + Cr Lf Space	X

a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 / - ? : () . , ' + = ; ! " % & * < > Space	Y
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In order to indicate the characters to be used at the formats of Data objects in the QR Code, the following conventional signs will be used:

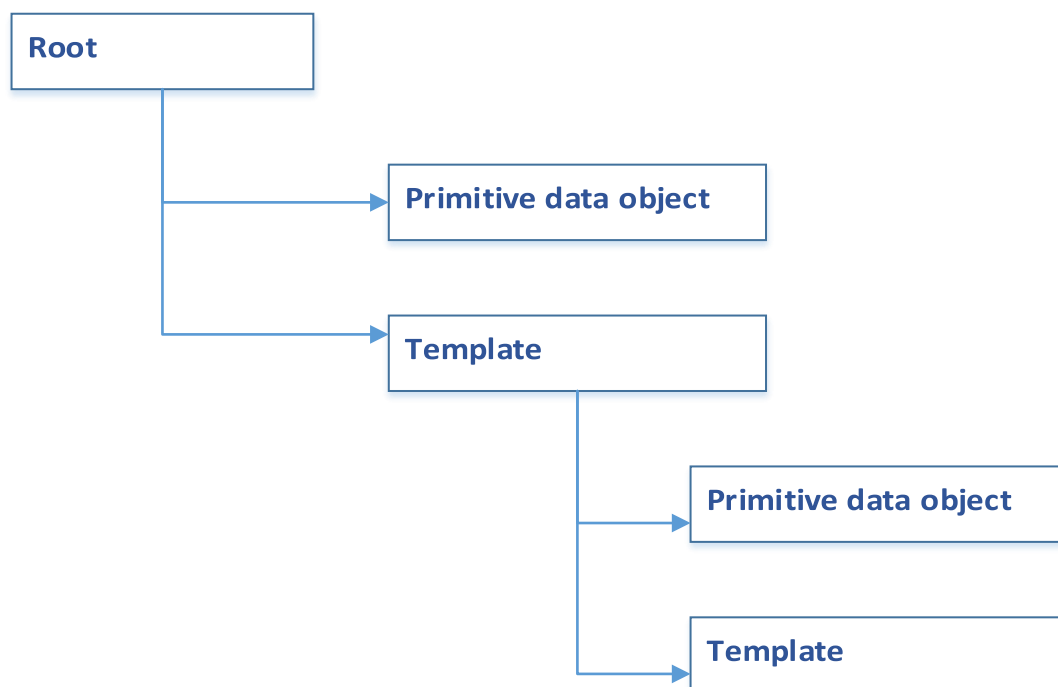
Conventional sign	Description
a	Arbitrary capital letter included in Y character set
b	Arbitrary capital letter and "-" sign included in Y character set
c	Arbitrary capital letter and figure included in Y character set
d	Arbitrary figure and decimal sign “,” included in Y character set. It expresses complete and fractional numbers by being full part before decimal sign, then fractional part.
e	Arbitrary small letter included in Y character set
f	Arbitrary capital letter, small letter and figure in Y character set
n	Arbitrary figure included in Y character set
x	Arbitrary character included in X character set
[]	It is not mandatory to fill the unit compatible with the format inside the bracket.
!	It is mandatory to fill the symbols at the specified number in the part which it belongs.

2. Data objects included in the information for QR Code

2.1 Structure of Data objects in the QR Code

Data objects contained within QR Code are organized in a tree-shaped structure, under the root (See: **Figure 1**). A Data object may be a primitive data object or a template. A template may include other primitive data objects or templates.

Figure 1.: Tree-shaped structure of Data objects in the QR Code



When describing the requisites of Data objects, **Structural indicator** is used. **Structural indicator** can get the following prices:

- RP: Primitive data object under the Root
- RT: Template under the Root
- TP: Primitive data object under the Template
- TT: Template under the Template

The information contained within QR Code is organized as a sequence of fields. Each Data object is made up of three individual fields. The first field is an identifier (ID) by which the data object can be referenced. The next field is a length field that explicitly indicates the number of characters included in the third field: the value field. A data object is then represented as an ID / Length / Value combination, where:

- **The ID** is encoded as two-digit numeric value, with a value ranging from "00" to "99";
- **The Length** is encoded as a two-digit numeric value, with a value ranging from "01" to "99";
- **The Value Field** may vary from 1 to 99 characters.

A data object that is not encapsulated within a template is said to be under the root of the QR Code.

The value of an ID is not unique and the data object to which it refers is context specific. If the ID is not under the root, the context of an ID is defined by the encapsulating template.

The value of some Data objects on QR Code may be submitted in the form "****" (consisting of symbol for 3 asterisks) by the Consumer. The presence of "****" indicates that the reader device of other side that scans QR code, is responsible for obtaining the necessary information, in the case of this information doesn't presented by Consumer. When merchant is required to include the information, included value should be adjusted according to the format defined on the same Data object.

Personal account information of the Consumer doesn't participate within QR Code. These requisites should be requested from the Central database via identification number (unique number in the payment system, National ID, mobile number, e-mail address etc.) which determined the Consumer in the system.

Central addressing schema is central Database in payment system infrustructure, for collecting, editing, keeping consumer information data and responding to the requisitions with these data.

2.2 Data objects included in the Consumer- presented QR Code

2.2.1 Data objects under the Root of Consumer- presented QR Code

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under the Root of QR Code information structure are given in the following table (See: **Table 2.**).

Table 2. Data objects under the Root of Consumer – presented QR Code

Name	ID	Format	Status	Structural indicator	Description
Standard version	"00"	3!a2!n	M	RP	It defines the standart version for QR Code. Note: "CPV01" has been identified as the initial version

					of the standard for QR Code Consumer- presented mode CPV –Consumer- Presented Version, 01 - It characterizes the initial version.
UUID	"01"	32x	M	RP	Identification code of payment system created on the basis of RFC 4122 standard in the environment where QR Code is applied. Note: [UUID] value must be accepted without (-) hyphen separators.
QR Code type	"02"	2!n	M	RP	It determines that QR Code is dynamic or static: 11 – Static QR Code 12 – Dynamic QR Code
Consumer general information	"03"	99x	M	RT	Template for the general information of consumer See: Table 3 .
Device ID	"04"	35x	O	RP	User device identifier Note: This object could be used for identification consumer's mobile device
UID type	"05"	22f	O	RP	Type of identifier which indicates consumer in the Central Addressing Schema Note: Each payment system infrastructure could indicates own type of identifier on base of used identification method Exp: Mobile number, e-mail, NationalID and etc.
UID	"06"	35x	M	RP	Unique identifier of The Consumer: 1. Internal identification number given in the payment system infrastructure 2. National ID 3. E-mail address 4. Mobile number

					and e.t Note: It is appealed to the Central information database with the value of this field for retrieving personal account information of the Consumer.
Authentication value	"07"	15x	C	RP	Value included to the QR Code information for authentication of the Consumer
Initiator of Payment	"08"	11c	M	RP	Unique internal identification number for payment initiator given in the payment system infrastructure
Country code	"09"	2!n	M	RP	Country code according to the standard of ISO 3166 -1 alpha 2. Part 2
Reserve for future use (RFU)	"10" - "98"	-	O	-	The areas that can be used in the next versions of the standard
Cyclic Redundancy Check (CRC)	"99"	4!c	M	RP	The checksum shall be calculated according to [ISO/IEC 13239] using the polynomial '1021' (hex) and initial value 'FFFF' (hex). The data over which the checksum is calculated shall cover all data objects, including their ID, Length and Value, to be included in the QR Code, in their respective order, as well as the ID and Length of the CRC itself (but excluding its Value).

2.2.2 Consumer general information template (ID “03”)

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under this template of QR Code information structure are given in the following tables (See: **Table 3.**).

Table 3.: Consumer general information template (ID “03”)

Name	ID	Format	Status	Structural indicator	Description
Name and Surname	"00"	35x	M	TP	Name and Surname of the Consumer Note: Personal information security should be provided
E-mail address	"01"	25x	O	TP	E-mail address of the Consumer
Mobil number	"02"	13!x	O	TP	Mobil number of the Consumer
Reserve for future use (RFU)	"03"- "99"	-	O	-	The areas that can be used in the next versions of the standard.

3. Example

3.1 QR Code on Consumer- presented mode

Məlumat sahəsinin adı	Dəyəri	Ümumi təsviri
Standard version	0005CPV01	Version "CPV01"
UUID	01328779c7cfceb149b89546c4f3faea3721	"8779c7cfceb149b89546c4f3faea3721" – QR Code generated in the Instant payments system
QR Code type	020212	"12"- Dinamic QR Code
Consumer general information	0369	
Name and Surname	0010Ə*Əliyev	Name and Surname of Consumer- "Ə*Əliyev"
E-mail adress	0120aliyev_ali@gmail.com	E-mail adress of consumer "aliyev_ali@gmail.com"
Mobil nömrəsi	0213+994554563245	Mobile number of consumer "+994554563245"
Device ID	0416f07a13984f6d116a	Consumer's device ID "f07a13984f6d116a"
UID type	0506mobile	Identifier type - "mobile"
UID	0613+994512520102	"+994512520102" Consumer unique identifier is mobile number
Authentication value	0706121234	Authentication value "121234"
Payment initiator	0811IPSPORT3XXX	Payment initiator - mobile portal memberid IPSPORT3XXX
Country Code	0905AZ-BA	"AZ-BA" – Azərbaycan, Baku
CRC	9904EE5B	CRC "EE5B"

0005CPV0101328779c7cfceb149b89546c4f3faea3721020
21203690010᠐*᠎aliyev0120aliyev_ali@gmail.com0213+99
45545632450406mobile0513+9945125201020606121234
0711IPSPORT3XXX0802AZ09030041012000987111345878
79904EE5B

