UDC 004.418

REVIEW OF GOOGLE CLASSROOM API AS A WAY TO DEVELOP APPLICATIONS FOR IMPROVING LEARNING PROCESS

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This article will focus on Google Classroom as a way to organize and simplify the learning process. Particularly here issues related to the API will be discussed, which allows you to expand Google Classroom possibilities to obtain a missing functionality.

Education plays a very important role in today's world. And it should be noted that information technologies can help to increase its quality. Services such as Google Classroom can contribute to it.

Simplification is due to the fact that it is possible to have an access to it both from the educational institution and at home. And both teachers and students can have an access. At the same time everyone can have feedback. Also, in Google Classroom it is possible to provide materials and give assignments. At the same time the deadlines is set for their implementation. In addition, in Google Classroom it is possible to access data via Google Drive.

But often services perform not all functions that are required. In this case, the development of the required module and integration of it into the service using the provided API developers helps. Google provides such an opportunity. Google Classroom API includes the following parts:
– manage courses and aliases;
– manage teachers and students;
– manage coursework and submissions;
– manage course invitations;
– manage guardians [1].

Google Classroom API was made like RESTful service with OAuth authorization.

REST or RESTful Web services are one way of providing interoperability between computer systems on the Internet. REST-compliant Web services allow to request systems to access and manipulate textual representations of Web resources using a uniform and predefined set of stateless operations [3].

OAuth is an open standard for authorization, commonly used as a way for Internet users to authorize websites or applications to access their information on other websites but without giving them the passwords [2].

Courses in Google Classroom are lessons on a certain subject during a certain period of time. The course can be identified either by using a unique id, or by assigning an alias.

For courses you can invoke such methods as "create", "delete", "get", "patch" and "update". For aliases you can run "create", "delete" and "list". Description of these methods for the courses is presented in Table 1.

Table 1 – Methods for working with courses

Method name	Possible error codes	Method description
create	PERMISSION_DENIED NOT_FOUND FAILED_PRECONDITION ALREADY_EXISTS	Creates a course
delete	PERMISSION_DENIED NOT_FOUND	Removes information about course
get	PERMISSION_DENIED NOT_FOUND	Gets information about course
list	PERMISSION_DENIED INVALID_ARGUMENT NOT_FOUND	Gets information about course that permitted to current user

Table 1 Continued

Method name	Possible error codes	Method description
patch	PERMISSION_DENIED NOT_FOUND INVALID_ARGUMENT FAILED_PRECONDITION	Updates some fields in information about course
update	PERMISSION_DENIED NOT_FOUND FAILED_PRECONDITION	Updates information about course

Methods for aliases are similar to the methods for the courses.

As you can see, when methods invoke, errors can occur. Error codes descriptions presented in Table 2.

Table 2 – Possible error description

Error name	Error description
PERMISSION_DENIED	Error occurs when operation is not permitted to current user
NOT_FOUND	Occurs if object does not exist
FAILED_PRECONDITION	Error occurs when owner's account is disabled or reached limit of course members.
ALREADY_EXISTS	Attempt to create object that already exists(course of alias)
INVALID_ARGUMENT	Error occurs when field or some fields filled incorrect

Google Classroom also includes work with students and with teachers. Teachers can create courses, and students should study them. Both groups can be identified by their e-mail and working with them a special API - Google Admin API is used.

To create a student or a teacher the method "create" can be used, to remove - the method "delete". If the student should be added on behalf of the teacher, you should use the method "invitations.create ()".

For invitation such methods as "accept", "create", "delete", "get", "list" can be used. Their functions correspond to the same methods of the courses, and the accept method is to add a student to a teacher's course. When they are performed they can cause errors, such as "PERMISSION_DENIED", "FAILED_RECOGNITION", "NOT_FOUND".

Also API includes possibility of work with course works. They are given to students at a particular time. To work with tasks such methods as "create", "get" and "list" can be used.

Materials can be attached to tasks and you can invoke methods such as "get", "list", "modifyAttachments", "patch", "reclaim", "return", "turnIn" over them. Methods that haven't been described previously are presented in Table 3.

Table 3 – Methods for working with submissions

Method name	Possible error codes	Method description
modifyAttachments	PERMISSION_DENIED INVALID_ARGUMENT NOT_FOUND	Modifies attachments to the submission
Method name	Possible error codes	Method description
reclaim	PERMISSION_DENIED FAILED_PRECONDITION INVALID_ARGUMENT NOT_FOUND	Reclaims submission that owns to student

Table 3 (continued

return	PERMISSION_DENIED INVALID_ARGUMENT NOT_FOUND	Returns student submission
turnIn	PERMISSION_DENIED INVALID_ARGUMENT NOT_FOUND	Turns in student submission to teacher

Guardians are the profiles that can get information about students, their courses and coursework, but they are not students. For guardians you can invoke such methods as "delete", "get" and "list".

In conclusion, it should be noted that the service Google Classroom is a very user friendly application that helps in the organization of educational process. Its great advantage is that its API is open and if you need to create a new module, you can do it yourself.

The article describes key elements of API. As you can see, its possibility to improve the learning process is quite great.

REFERENCES

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