Государственный Университет Молдовы

Факультет Математики и Информатики

Департамент Информатики

“Aplicatii pentru dispositive mobile”

Лабораторная работа 3

Проверил: Латул Георгий

Выполнил: Чобану Артём

Кишинев 2021

**Код программы**

package com.android.lab3;  
  
import android.annotation.SuppressLint;  
import android.content.Context;  
import android.content.res.Resources;  
  
import com.android.lab3.concurrent.AsyncTaskRunner;  
import com.android.lab3.concurrent.TaskRunner;  
import com.android.lab3.storage.DefaultQuizStorage;  
import com.android.lab3.storage.QuizStorage;  
import com.android.lab3.ui.quiz.DefaultQuizPresenter;  
import com.android.lab3.ui.quiz.QuizPresenter;  
  
@SuppressLint("StaticFieldLeak")  
public class DependencyContainer {  
 private static DependencyContainer INSTANCE = null;  
 private static Context \_context;  
  
 private DependencyContainer() {  
 }  
  
 public static DependencyContainer getINSTANCE() {  
 if (INSTANCE == null) {  
 INSTANCE = new DependencyContainer();  
 }  
   
 return INSTANCE;  
 }  
  
 public static void init(Context context) {  
 \_context = context;  
 }  
  
 public Resources resources() {  
 return \_context.getResources();  
 }  
  
 public QuizStorage quizStorage() {  
 return new DefaultQuizStorage(resources());  
 }  
  
 public <T> TaskRunner<T> taskRunner() {  
 return new AsyncTaskRunner<>();  
 }  
}

package com.android.musiquiz.ui.quiz;  
  
import android.os.Bundle;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.fragment.app.Fragment;  
  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
  
import com.android.lab3.DependencyContainer;  
import com.android.lab3.R;  
import com.android.lab3.data.QuizQuestion;  
import com.android.lab3.databinding.FragmentQuizBinding;  
import com.android.lab3.ui.quiz.dialog.FillAnswerQuizDialog;  
import com.android.lab3.ui.quiz.dialog.MultiChoiceQuizDialog;  
import com.android.lab3.ui.quiz.dialog.SingleChoiceQuizDialog;  
import com.android.lab3.ui.quiz.dialog.listener.DialogListener;  
import com.android.lab3.view.QuizView;  
import com.google.android.material.snackbar.Snackbar;  
  
import java.util.List;  
  
public class QuizFragment extends Fragment implements QuizView, DialogListener {  
 private FragmentQuizBinding binding;  
 private QuizPresenter presenter;  
  
 @Override  
 public View onCreateView(@NonNull LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {  
 binding = FragmentQuizBinding.inflate(inflater, container, false);  
 return binding.getRoot();  
 }  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 presenter = new DefaultQuizPresenter(DependencyContainer.getINSTANCE().taskRunner(), DependencyContainer.getINSTANCE().quizStorage(), this);  
 presenter.onQuizQuestionRequested();  
 }  
  
 @Override  
 public void onAnswerSubmitted(QuizQuestion quizQuestion, List<String> submittedAnswers) {  
 presenter.onAnsweredSubmitted(quizQuestion, submittedAnswers);  
 }  
  
 @Override  
 public void onNewQuestionRequested() {  
 presenter.onQuizQuestionRequested();  
 }  
  
 @Override  
 public void onQuestionGenerated(QuizQuestion quizQuestion) {  
 switch (quizQuestion.getType()) {  
 case SINGLE\_CHOICE:  
 new SingleChoiceQuizDialog(quizQuestion, this).show(getParentFragmentManager(), SingleChoiceQuizDialog.class.getName());  
 break;  
 case MULTI\_CHOICE:  
 new MultiChoiceQuizDialog(quizQuestion, this).show(getParentFragmentManager(), MultiChoiceQuizDialog.class.getName());  
 break;  
 case FILL\_ANSWER:  
 new FillAnswerQuizDialog(quizQuestion, this).show(getParentFragmentManager(), FillAnswerQuizDialog.class.getName());  
 break;  
 }  
 }  
  
 @Override  
 public void onAnswerCorrect() {  
 Snackbar.make(binding.getRoot(), R.string.message\_answer\_correct, Snackbar.LENGTH\_SHORT).show();  
 }  
  
 @Override  
 public void onAnswerWrong() {  
 Snackbar.make(binding.getRoot(), R.string.error\_wrong\_answer, Snackbar.LENGTH\_SHORT).show();  
 }  
  
 @Override  
 public void onError() {  
 Snackbar.make(binding.getRoot(), R.string.error\_unknown\_error\_occurred, Snackbar.LENGTH\_SHORT).show();  
 }  
  
 public static QuizFragment newInstance() {  
 return new QuizFragment();  
 }  
}

package com.android.lab3;  
  
import android.app.Application;  
  
public class QuizApplication extends Application {  
 @Override  
 public void onCreate() {  
 super.onCreate();  
 DependencyContainer.init(this);  
 }  
}

package com.android.lab3.ui.home;  
  
import android.os.Bundle;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.fragment.app.Fragment;  
  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
  
import com.android.lab3.R;  
import com.android.lab3.databinding.FragmentHomeBinding;  
import com.android.lab3.ui.quiz.QuizFragment;  
  
public class HomeFragment extends Fragment {  
 private FragmentHomeBinding binding;  
  
 @Override  
 public View onCreateView(@NonNull LayoutInflater inflater, ViewGroup container,  
 Bundle savedInstanceState) {  
 binding = FragmentHomeBinding.inflate(inflater, container, false);  
 return binding.getRoot();  
 }  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 binding.btnPlay.setOnClickListener(button ->  
 requireActivity()  
 .getSupportFragmentManager()  
 .beginTransaction()  
 .replace(R.id.fragment\_container, QuizFragment.newInstance())  
 .addToBackStack(this.getClass().getName())  
 .commit());  
 }  
  
 public static HomeFragment newInstance() {  
 return new HomeFragment();  
 }  
}

package com.android.lab3.ui.quiz.dialog.listener;  
  
import com.android.lab3.data.QuizQuestion;  
  
import java.util.List;  
  
public interface DialogListener {  
 void onNewQuestionRequested();  
 void onAnswerSubmitted(QuizQuestion quizQuestion, List<String> submittedAnswers);  
}

package com.android.lab3.ui.quiz.dialog;  
  
import android.app.Dialog;  
import android.os.Bundle;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.RadioButton;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.appcompat.app.AlertDialog;  
import androidx.fragment.app.DialogFragment;  
  
import com.android.lab3.R;  
import com.android.lab3.data.QuizQuestion;  
import com.android.lab3.databinding.DialogFillAnswerBinding;  
import com.android.lab3.ui.quiz.dialog.listener.DialogListener;  
import com.google.android.material.radiobutton.MaterialRadioButton;  
  
import java.util.Collections;  
  
public class FillAnswerQuizDialog extends DialogFragment {  
 private DialogFillAnswerBinding binding;  
 private final QuizQuestion quizQuestion;  
 private final DialogListener dialogListener;  
  
 public FillAnswerQuizDialog(QuizQuestion quizQuestion, DialogListener dialogListener) {  
 this.quizQuestion = quizQuestion;  
 this.dialogListener = dialogListener;  
 }  
  
 @Nullable  
 @Override  
 public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable Bundle savedInstanceState) {  
 return binding.getRoot();  
 }  
  
 @NonNull  
 @Override  
 public Dialog onCreateDialog(@Nullable Bundle savedInstanceState) {  
 binding = DialogFillAnswerBinding.inflate(requireActivity().getLayoutInflater());  
 AlertDialog alertDialog = new AlertDialog.Builder(requireContext(), R.style.Theme\_Musiquiz\_NoBackgroundDialog)  
 .setView(binding.getRoot())  
 .setCancelable(false).create();  
 alertDialog.getWindow().setDimAmount(0);  
 alertDialog.setCanceledOnTouchOutside(false);  
 return alertDialog;  
 }  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 populateDialog();  
 registerUserInteraction();  
 }  
  
 private void populateDialog() {  
 binding.tvQuestionTitle.setText(quizQuestion.getTitle());  
 }  
  
 private void registerUserInteraction() {  
 binding.fabRequestQuiz.setOnClickListener(view -> {  
 dialogListener.onNewQuestionRequested();  
 requireDialog().dismiss();  
 });  
 binding.fabSubmitAnswer.setOnClickListener(view -> {  
 dialogListener.onAnswerSubmitted(quizQuestion, Collections.singletonList(binding.etQuestionAnswer.getText().toString()));  
 });  
 }  
}

package com.android.lab3.ui.quiz.dialog;  
  
import android.app.Dialog;  
import android.os.Bundle;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.CheckBox;  
import android.widget.CompoundButton;  
import android.widget.Toast;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.appcompat.app.AlertDialog;  
import androidx.fragment.app.DialogFragment;  
  
import com.android.lab3.R;  
import com.android.lab3.data.QuizQuestion;  
import com.android.lab3.databinding.DialogMultiChoiceBinding;  
import com.android.lab3.ui.quiz.dialog.listener.DialogListener;  
import com.google.android.material.checkbox.MaterialCheckBox;  
import com.google.android.material.radiobutton.MaterialRadioButton;  
  
import java.util.ArrayList;  
import java.util.Collections;  
import java.util.List;  
  
public class MultiChoiceQuizDialog extends DialogFragment {  
 private DialogMultiChoiceBinding binding;  
 private final QuizQuestion quizQuestion;  
 private final DialogListener dialogListener;  
 private List<String> submittedAnswers = new ArrayList<>();  
  
 public MultiChoiceQuizDialog(QuizQuestion quizQuestion, DialogListener dialogListener) {  
 this.quizQuestion = quizQuestion;  
 this.dialogListener = dialogListener;  
 }  
  
 @Nullable  
 @Override  
 public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable Bundle savedInstanceState) {  
 return binding.getRoot();  
 }  
  
 @NonNull  
 @Override  
 public Dialog onCreateDialog(@Nullable Bundle savedInstanceState) {  
 binding = DialogMultiChoiceBinding.inflate(requireActivity().getLayoutInflater());  
 AlertDialog alertDialog = new AlertDialog.Builder(requireContext(), R.style.Theme\_Musiquiz\_NoBackgroundDialog)  
 .setView(binding.getRoot())  
 .setCancelable(false).create();  
 alertDialog.getWindow().setDimAmount(0);  
 alertDialog.setCanceledOnTouchOutside(false);  
 return alertDialog;  
 }  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 populateDialog();  
 registerUserInteraction();  
 }  
  
 private void populateDialog() {  
 binding.tvQuestionTitle.setText(quizQuestion.getTitle());  
 for (String possibleAnswer : quizQuestion.getPossibleAnswers()) {  
 MaterialCheckBox checkBox = new MaterialCheckBox(requireContext());  
 checkBox.setTextColor(getResources().getColor(R.color.white, null));  
 checkBox.setText(possibleAnswer);  
 checkBox.setId(View.generateViewId());  
 binding.layoutMultiChoiceAnswers.addView(checkBox);  
 }  
 }  
  
 private void setOnCheckBoxListener() {  
 List<String> submittedAnswers = new ArrayList<>();  
 for (int index = 0; index < binding.layoutMultiChoiceAnswers.getChildCount(); index++) {  
 MaterialCheckBox checkBox = (MaterialCheckBox) binding.layoutMultiChoiceAnswers.getChildAt(index);  
 checkBox.setOnCheckedChangeListener((compoundButton, isChecked) -> {  
 if (isChecked) {  
 submittedAnswers.add(checkBox.getText().toString());  
 } else {  
 submittedAnswers.remove(checkBox.getText().toString());  
 }  
 this.submittedAnswers = submittedAnswers;  
 });  
 }  
 }  
  
 private void registerUserInteraction() {  
 setOnCheckBoxListener();  
 binding.fabRequestQuiz.setOnClickListener(view -> {  
 dialogListener.onNewQuestionRequested();  
 requireDialog().dismiss();  
 });  
 binding.fabSubmitAnswer.setOnClickListener(view -> {  
 dialogListener.onAnswerSubmitted(quizQuestion, submittedAnswers);  
 });  
 }  
}

package com.android.lab3.ui.quiz.dialog;  
  
import android.app.Dialog;  
import android.os.Bundle;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.RadioButton;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.appcompat.app.AlertDialog;  
import androidx.fragment.app.DialogFragment;  
  
import com.android.lab3.R;  
import com.android.lab3.data.QuizQuestion;  
import com.android.lab3.databinding.DialogSingleChoiceBinding;  
import com.android.lab3.ui.quiz.dialog.listener.DialogListener;  
import com.google.android.material.radiobutton.MaterialRadioButton;  
  
import java.util.Collections;  
  
public class SingleChoiceQuizDialog extends DialogFragment {  
 private DialogSingleChoiceBinding binding;  
 private final QuizQuestion quizQuestion;  
 private final DialogListener dialogListener;  
  
 public SingleChoiceQuizDialog(QuizQuestion quizQuestion, DialogListener dialogListener) {  
 this.quizQuestion = quizQuestion;  
 this.dialogListener = dialogListener;  
 }  
  
 @Nullable  
 @Override  
 public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable Bundle savedInstanceState) {  
 return binding.getRoot();  
 }  
  
 @NonNull  
 @Override  
 public Dialog onCreateDialog(@Nullable Bundle savedInstanceState) {  
 binding = DialogSingleChoiceBinding.inflate(requireActivity().getLayoutInflater());  
 AlertDialog alertDialog = new AlertDialog.Builder(requireContext(), R.style.Theme\_Musiquiz\_NoBackgroundDialog)  
 .setView(binding.getRoot())  
 .setCancelable(false).create();  
 alertDialog.getWindow().setDimAmount(0);  
 alertDialog.setCanceledOnTouchOutside(false);  
 return alertDialog;  
 }  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 populateDialog();  
 registerUserInteraction();  
 }  
  
 private void registerUserInteraction() {  
 binding.fabRequestQuiz.setOnClickListener(view -> {  
 dialogListener.onNewQuestionRequested();  
 requireDialog().dismiss();  
 });  
 binding.fabSubmitAnswer.setOnClickListener(view -> {  
 MaterialRadioButton checkedRadioButton = binding.getRoot().findViewById(binding.rgSingleChoiceAnswers.getCheckedRadioButtonId());  
 if (checkedRadioButton != null) {  
 dialogListener.onAnswerSubmitted(quizQuestion, Collections.singletonList(checkedRadioButton.getText().toString()));  
 }  
 });  
 }  
  
 private void populateDialog() {  
 binding.tvQuestionTitle.setText(quizQuestion.getTitle());  
 for (String possibleAnswer : quizQuestion.getPossibleAnswers()) {  
 MaterialRadioButton radioButton = new MaterialRadioButton(requireContext());  
 radioButton.setTextColor(getResources().getColor(R.color.white, null));  
 radioButton.setText(possibleAnswer);  
 radioButton.setId(View.generateViewId());  
 binding.rgSingleChoiceAnswers.addView(radioButton);  
 }  
 }  
}

package com.android.lab3.ui.quiz;  
  
import android.util.Log;  
  
import com.android.lab3.concurrent.TaskRunner;  
import com.android.lab3.concurrent.TaskRunnerCallback;  
import com.android.lab3.data.QuestionType;  
import com.android.lab3.data.QuizQuestion;  
import com.android.lab3.storage.QuizStorage;  
import com.android.lab3.view.QuizView;  
  
import java.util.ArrayList;  
import java.util.List;  
import java.util.Locale;  
import java.util.Random;  
  
public class DefaultQuizPresenter implements QuizPresenter, TaskRunnerCallback<List<QuizQuestion>> {  
 private final TaskRunner taskRunner;  
 private final QuizStorage quizStorage;  
 private final QuizView view;  
  
 public DefaultQuizPresenter(TaskRunner taskRunner, QuizStorage quizStorage, QuizView view) {  
 this.taskRunner = taskRunner;  
 this.quizStorage = quizStorage;  
 this.view = view;  
 }  
  
 @Override  
 public void onSuccess(List<QuizQuestion> quizQuestions) {  
 Random randomQuestion = new Random();  
 view.onQuestionGenerated(quizQuestions.get(randomQuestion.nextInt(quizQuestions.size())));  
 }  
  
 @Override  
 public void onError(Exception exception) {  
 Log.e(TaskRunnerCallback.class.getName(), "onError: ", exception);  
 view.onError();  
 }  
  
 @Override  
 public void onQuizQuestionRequested() {  
 taskRunner.execute(quizStorage::loadQuizQuestions, this);  
 }  
  
 @Override  
 public void onAnsweredSubmitted(QuizQuestion quizQuestion, List<String> submittedAnswers) {  
 List<String> correctAnswers = new ArrayList<>();  
 List<String> answers = new ArrayList<>();  
 for (String correctAnswer : quizQuestion.getCorrectAnswers()) {  
 correctAnswers.add(correctAnswer.toLowerCase(Locale.ROOT));  
 }  
 for (String submittedAnswer : submittedAnswers) {  
 answers.add(submittedAnswer.toLowerCase(Locale.ROOT));  
 }  
 if (quizQuestion.getType().equals(QuestionType.MULTI\_CHOICE)) {  
 if (correctAnswers.containsAll(answers)) {  
 //todo compare correctly  
 view.onAnswerCorrect();  
 } else {  
 view.onAnswerWrong();  
 }  
 } else if (answers.stream().anyMatch(correctAnswers::contains)) {  
 view.onAnswerCorrect();  
 } else {  
 view.onAnswerWrong();  
 }  
 }  
}

package com.android.lab3.ui.quiz;  
  
import com.android.lab3.data.QuizQuestion;  
  
import java.util.List;  
  
public interface QuizPresenter {  
 void onQuizQuestionRequested();  
 void onAnsweredSubmitted(QuizQuestion quizQuestion, List<String> submittedAnswers);  
}

package com.android.lab3.ui.splash;  
import android.os.Bundle;  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.fragment.app.Fragment;  
import android.os.Handler;  
import android.os.Looper;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import com.android.lab3.R;  
import com.android.lab3.ui.home.HomeFragment;  
import com.android.lab3.ui.quiz.QuizFragment;  
public class SplashFragment extends Fragment {  
 public static final long SPLASH\_SCREEN\_DELAY = 3000;  
 public static SplashFragment newInstance() {  
 return new SplashFragment();  
 }  
 @Override  
 public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {  
 return inflater.inflate(R.layout.fragment\_splash, container, false);  
 }  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 new Handler(Looper.getMainLooper()).postDelayed(() ->  
 requireActivity().getSupportFragmentManager()  
 .beginTransaction()  
 .replace(R.id.fragment\_container, HomeFragment.newInstance())  
 .commit(), SPLASH\_SCREEN\_DELAY); }  
}

**Скриншоты программы**

  

 