| | | |
|---|---|---|
| Game application: | Points: | _____ / 7 |
| Bluetooth/UART: | Points: | _____ / 5 |
| Music Playback (MP3 and Volume): | Points: | _____ / 4 |
| GLCD: | Points: | _____ / 5 |
| Rand,ADC: | Points: | _____ / 4 |
| Overall: | Points: | _____ / 25 |

# Microcontroller VU

## Application Protocol

IhrVorname/Your First Name IhrNachname/YourSurname, MatrNr. 3333333
e3333333@student.tuwien.ac.at

November 26, 2018

**Declaration of Academic Honesty**

I hereby declare that this protocol (text and code) is my own original work written in my own words, that I have completed this work using only the sources cited in the text, and that neither this protocol nor parts of it have ever before been submitted to this or any other course.

_____ _____
(Date) (Signature of Student)

**Admission to Publish**

☐ I explicitly **allow** the publication of my solution (protocol and sourcecode) on the course webpage.

☐ I **do not allow** the publication of my solution (default if nothing is checked).

_____
(Signature of Student)

# Contents

**Note:** This template is provided to show you how LaTeX works and may not contain all subsections your protocol should contain.
**Note:** You can, and in fact should, reuse appropriate parts from the implementation proposal in the protocol.

# 1 Overview

## 1.1 Connections, External Pullups/Pulldowns

### Pin Assignment

| What | |
|---|---|
| J12 | Connected to VCC |

Write down all things we need to know to get your program running on our board. All non-standard external connections, all switches your program needs, ... If we cannot figure out how we get your program running, we can not give you points for it.

## 1.2 Design Decisions

Here comes the design decisions that you made during programming.

## 1.3 Specialities

Does you solution have something special (positive or negative)?

# 2 Main Application

Describe your application.

# 3 Music Playback

## 3.1 SPI

Explain your modules.

### 3.2 Playback

# 4 LC–Display

### 4.1 GLCD

Explain your modules.

### 4.2 HAL GLCD

# 5 ...explain your application modules ...

# 6 ...the above were only examples

# 7 Problems

In this section you can write about the problems you encoutered while implementation your application. This can range from misunderstanding of the hardware, to plain, simple, typos in your program.

This is important information for us, which allows us to determine if there were common problems and act accordingly. Don't worry, we don't deduct points for problems mention here which are already fixed.

# 8 Work

Estimate the work you put into solving the Application. You can add additional points, if you like.

| Task | Assumption (IP) | Reality |
|---|---|---|
| reading manuals, datasheets | 5 h | 5 h |
| program design | 5 h | 5 h |
| programming | 10 h | 10 h |
| debugging | 45 h | 50 h |
| questions, protocol | 10 h | 5 h |
| **Total** | 75 h | 75 h |