

EE/CprE/SE 492 BI-WEEKLY REPORT 1

2/5/23 – 2/19/23

Group number: SDMAY23-14

Project title: Mobile Vehicle Security Bus

Client &/Advisor: John Potter &/ Joseph Zambreno

Team Members/Role:

- 1. Campbell, Ryan / Team 1**
- 2. Jansen, Levi / Team 3**
- 3. Lawson, Riley / Team 2**
- 4. Ridgeway, Drake / Team 2**
- 5. Scehovic, Ryan / Team 1 Leader**
- 6. Stricker, Cody / Team 3 Leader**
- 7. Torres, Josue (Josh) / Team 2 Leader**

○ **Weekly Summary**

Team 1: Worked on CMAC code to read CAN frames from the log file and create structs for each frame, then pass sets of 5 frames into the CMAC function to generate a CMAC tag that can be used for authentication. Then after meeting with our client and getting feedback we added in code to decode the Source Address and PGN from each line in the file.

Team 2: Implemented Team 3's functions from their source code. Initialized structs and a linked list to take in a message, extend the message, and send the message. Function packMsg() takes in the CAN_DATA message, counts how many messages there are until 5. Once it hits 5 messages, it runs the export() function and prints the CAN FD Frame.

Team 3: Adapted our simulated CAN messages to fit the updated format that Team 1 was using. Installed additional software in the linux environment to get started with SocketCAN. Researched and experimented with SocketCAN tools.

○ **Past week accomplishments**

- Drake Ridgeway, Riley Lawson, Josue Torres: Worked on source code for team 3, collaborated with other team members to get correct functions and libraries. Wrote code for the messaging processor, created a new branch, and created an

extension into CAN FD from CAN.

- Ryan Scehovic and Ryan Campbell: Scehovic and Campbell met together with Zambreno in order to help re-factor our code, get it working and integrated into function calls for use by fellow project teams. Scehovic worked primarily with setting up the input to be grabbed from the CAN DATA from the .asc log file, while Campbell helped with the bitwise operations used to mask only certain fields in the data to obtain the PGN and Source Address. These accomplishments helped acquire the metadata for the CAN DATA frame to be packed into FD for assistance in the analysis of the CAN FRAMES on the receiving end. Scehovic also worked on getting CMAC to work with the newly packed 5 frames while Campbell began looking at socketCAN for simulation with other teams.

- Cody Stricker and Levi Jansen: Cody sticker wrote a random CAN message generation tool and CAN message burst tool. Levi Jansen provided research and constructive input to the design process of these tools. Cody Stricker and Levi Jansen both researched and experimented with SocketCAN library with intention to meet the Monday deadline to have a node to node communication running through SocketCAN.

○ **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*

- Drake Ridgeway: I was busy this week from other classes, however in our source code, we had issues compiling it because of certain type conflicts.

- Riley Lawson: Need to increase my communication skills with my team members and with other teams along with doing more tasks to move progression along with SocketCAN and the project as a whole. Overall, I need to be doing more and am willing to take on more responsibilities within our team. Also, had compiler issues that were fixed, but ended up removing a couple of ideas off to get working code, will add back in very near future.

- Team 3: Increase communication to ensure proper implementation of SocketCAN tool with other group members' code.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should</i>	<u>Hours this</u> <u>Week</u>	<u>HOURS</u> <u>Cumulative</u>
-------------	---	----------------------------------	-----------------------------------

	<i>be short.)</i>	<u>(Feb 12th - 18th)</u>	<u>(Semester)</u>
Campbell, Ryan	Coding for CMAC, SocketCAN understanding + implementation, Source address + PGN	10	50
Jansen, Levi	Research into socket can, working in tandem with Cody	8	20
Lawson, Riley	Coding for msg_processor and reworked it into our code.	8	20
Ridgeway, Drake	Source Code for Team 3, Queues, Structs, Implementation of Functions	6	20
Scehovic, Ryan	Coding for CMAC, SocketCAN understanding + implementation, Source address + PGN	12	50
Stricker, Cody	Research into socket can and can-utils.	10	20
Torres, Josue (Josh)	Built structure for packing CAN frames and exporting them to the terminal.	3	15

○ **Comments and extended discussion** *(Optional)*

As a team we are working on keeping all members accountable for their work to ensure everyone is contributing fairly to the project. There have been some issues with some people being responsible for their work and communicating where they are at, so they are focused on improving in those areas.

○ **Plans for the upcoming week**

- Drake Ridgeway: Work on more of the source code in team 3 to get it fully functional. Specifically, messages being output correctly on the terminal
- Riley Lawson: Continue working on coding for the message_processor and complete the task within the next couple of days. Collaborate with team members on the tasks that need to be completed for our next meeting. Also, continue integration with the other code to include the functions and structs that have already been completed.
- Ryan Campbell: Continue research and development into socketCAN and solidify CMAC to ensure correctness and validation on the receiving end.

- Ryan Scehovic: Continuing our research in socketCAN and development with current code. Meeting with Campbell with Zambreno to help verify the correctness of CMAC and integration with socketCAN utils.
 - Cody Stricker: Continue research into socketCAN tools for further development. Improve and discuss the future of the CAN burst and CAN generation tools.
 - Levi Jansen: Look into the circular buffer more (this was supposed to happen this past week, but SocketCAN work took precedence), adapt Team 3's SocketCAN progress to work with the other teams' code.
- Josue Torres: Ensure code works properly, as well as learning how to use SocketCAN. Start tying everyone's code together.

○ **Summary of weekly advisor meeting** *(If applicable/optional)*

Ryan Campbell and Ryan Scehovic met with Joe Zambreno the previous week to work on improving our CMAC and CAN data functions for combining frames together to be authenticated. He helped us organize our code to make it more reusable with future add ons, as well as recommended things like LibSodium for us to look into.

Grading criteria

Each weekly report is worth 10 points. Scores will be awarded as follows:

- **8 – 10:** Progress for your project seems to be suitable. Documentation and hours reported by team members are adequate.
- **6 – 8:** There is scope of improvement both in your report and your project progress. Can consult with instructor/TA after class for further inputs.
- **< 6:** Please talk to instructors/TA after class hours about any difficulties that you/your team is facing.

Each weekly report should be unique in that they have a unique set of supporting details for your contributions. So please do not just copy your reports from the previous week. In addition, please avoid any personal pronouns (he, she, I, you). Try to keep your reports as neat as possible.