SCHOOL OF COMPUTING

Faculty of Engineering

SECP1513

TECHNOLOGY & INFORMATION SYSTEM

ROBOKAR

SECTION : 08 - 1SECR

COURSE : BACHELOR OF COMPUTER SCIENCE - COMPUTER NETWORKS AND SECURITY

NO	NAME	STUDENT ID
1	ANGELICA	A19EC0181
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3	IFFAH NAJIHAH BINTI MHD NIZAM	A19EC0052
4	NG PEI WEN	A19EC0117
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6	TENG JIA JING	A19EC0208

LACTURER NAME : DR HASWADI BIN HASAN

DUE DATE : 19/12/2019

Introduction and Detail Visit

Last Sunday on 8 December 2019, our Technology and Information System class under Dr. Haswadi had an Industrial Visit through the Robokar in UTM.

As we are from Section 8 , we attended ourselves in the Active-Learning Lab in level 3 (351-01) of Faculty Computing N28. We need to form a group of six people, to start our robocar programming activity. Our members are Che Nurul Fathihah bt Mohd Hishamudin, Iffah Najihah binti Mhd Khizam, Ng Pei Wen , Syahmin Fa'izun Wazien binti Amlan , Teng Jia Jing and Angelica. Our group are formed from girls because we also confident can get some achievement in this industrial visit.

Therefore, we straight have our component which is a RoboKar with a thumb drive which have a set of basic codes to be used later. There also come with a connecting USB cable to transfer the programme to the RoboKar. These are the pictures of the components that we had last time before start having our briefing about the event.

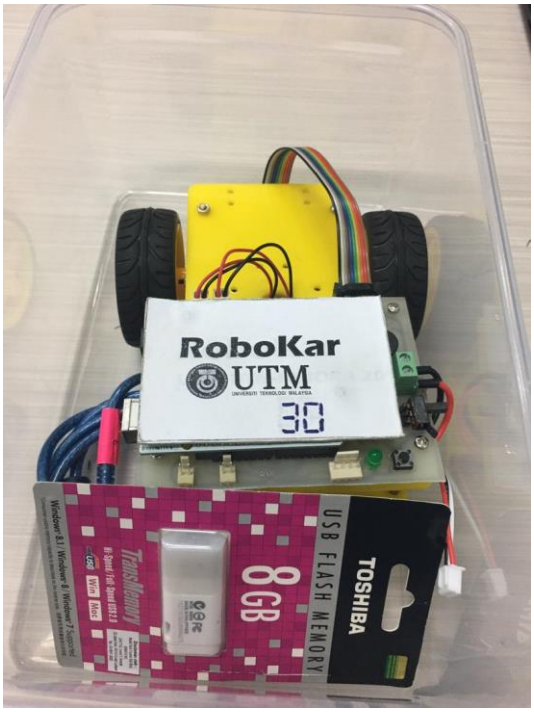


Figure 1 is the pictures of the RoboKar .

After that, we had our briefing sessions with few seniors and some technical professional staffs about half an hour by introducing themselves and start talk about some origin of this RobaKar in UTM, we also realized our university have some competition and sharing sessions on this programming activity around schools and taught the students some of the basic programming and give them a chance to hand on with these technology.

Figure 2: show that all of our group members pay attention when the briefing sessions started.

Through the briefing and introduction part, we have a guide on how to continue our work and procedures after this. All those staffs be fair by talking in English because our class have some International students, then all of us can understand in the same time and save the time to translate.

These are some of the slides given when the briefing started. We can see through the example and how to functioning it and start doing it on our own. They described in detail of all the part of the C language and also how to transfer all the programme to the RoboKar.

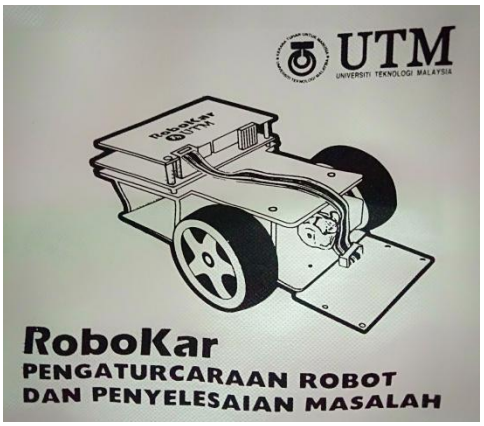
After the briefing sessions, we have to start our work and projects. During this time, we still can ask the staffs there which can help us to dominate our skills on programming and understand the theory and the logic thinking of the RoboKar movements. We also keep on repairing our code of the programme because every time we test on it, there will be some error movement and sometimes are totally opposite with our expectation.

Every time we test, we will make a lot of correction and get all the functions steps by steps to avoid get confused and become complicated. It take about 1 and more hour to totally complete the whole programme. We also speed up and slow the down the movements according to our necessities so the RoboKar can make a correct movements after detect the objects and lines using its sensors. After tested for times, we have a confidence to join a competition downstairs to fully functioning all our works and show the power of girls also meaningful. The figure show when we test on the line after we set the programme inside the RoboKar.

Figure 3 shows that we all are discussing the programme and the function of every senses that a RoboKar can be detected

Figure 4 show us that we asking some advices and ideas from our seniors and from our lecturer Dr. Haswadi.

Detailed Descriptions Include Organization Structure, Services, Achievements, Projects That Have Been Developed or Maintained



Project Name:

Basic Programming Robocar Using C Language (Asas Pengaturcaraan Robokar Dalam Bahasa C)

Organizers:

School of Computing & School of Electrical (University Teknologi Malaysia)

By : Dr. Shahliza Abd Halim and Prof.Madya DR. Rosbi bin Mamat

Introduction:

The use of technology in learning can inspire students to think critically in solving problems and to encourage creativity to come up with innovative solutions. Robotics is a technology that enables students to actively participate in teaching. Early exposure to ICT technology at school or pre-university allows students to make connections between theory and its practical use in problem solving. Therefore, robotics is a great teaching tool for solving creative problems and critical thinking. In addition, soft skills are also practiced among students through teamwork in solving problems.

The development of robotic systems in teaching and learning in schools and universities has increased, as this technology meets educational needs, especially to solve problems. In Malaysia the National Robotic Competition (NRC) is one of the co-

curriculum activities under the Ministry of Education that uses LEGO robots. The purpose of the competition is to provide a learning platform that allows school children to learn four generic skills, namely problem solving, creative thinking, interpersonal communication and teamwork. Competitions like these create an atmosphere of fun and engaging teaching and learning while increasing confidence in communication among school students.

Realizing the benefits of robotic technology in teaching, a small mobile robot, called RoboKar, was developed at Universiti Teknologi Malaysia (UTM) for the purpose of teaching problem solving topics through computer software programming. The same robot has been used for teaching courses at UTM and in schools. These robots provide a practical platform to teach real-time programming concepts for computer science and student software engineering at UTM. It's cheap and this small-scale mobile robot, and it's easy to use by programmers without a hardware background for robot software programs.

Apart from the exposure of technology to school students, the application of soft skills is also emphasized. This is to ensure that the students have the best knowledge and skills for the preparation of employment in various occupations. For example, effective communication skills can give students high confidence when they enter the workforce in addition to being able to use information communication technology (ICT) well, students also have the ability to think creatively and critically and to act rationally. Communication between team members is crucial to solving a problem, it can indirectly foster teamwork among school students and can foster leadership qualities at school, in the family, and in the community.

Program Implementation Experience:

Participants in the program are upper secondary students and teachers involved in problem solving subjects especially programming. Based on UTM's early experience in teaching students using Robokar, our findings show that students strongly agree that teaching problem solving using Robokar can improve their problem solving skills.

So far UTM has been conducting robotics lessons only on retail or on demand. We believe that if the modules and teaching materials we have provided can be integrated

with existing subjects and activities in the school, they will be able to engage more students.

The program aims to foster creativity and innovation among high school students in line with iCARE's role in education towards rural education development sustainability through the introduction of computer technology. In addition, the program also expanded the use of mobile devices (iPad mini) in search of additional materials for study. The iCARE program also assists students in the writing and preparation of reports for preparation for entry into higher education institutions.

Objectives:

(i) Identify subjects and activities in schools that can encourage the development of creative and innovative problem solving skills.

(ii) Provide learning platforms (robots and teaching and learning materials) that enable school students to learn four generic skills, namely problem solving, creative thinking, interpersonal communication and teamwork.

(iii) Provide training to the teachers involved in teaching materials and robot technology to be used.

(iv)Provide Robotics league for secondary schools in Southeast Johor Region

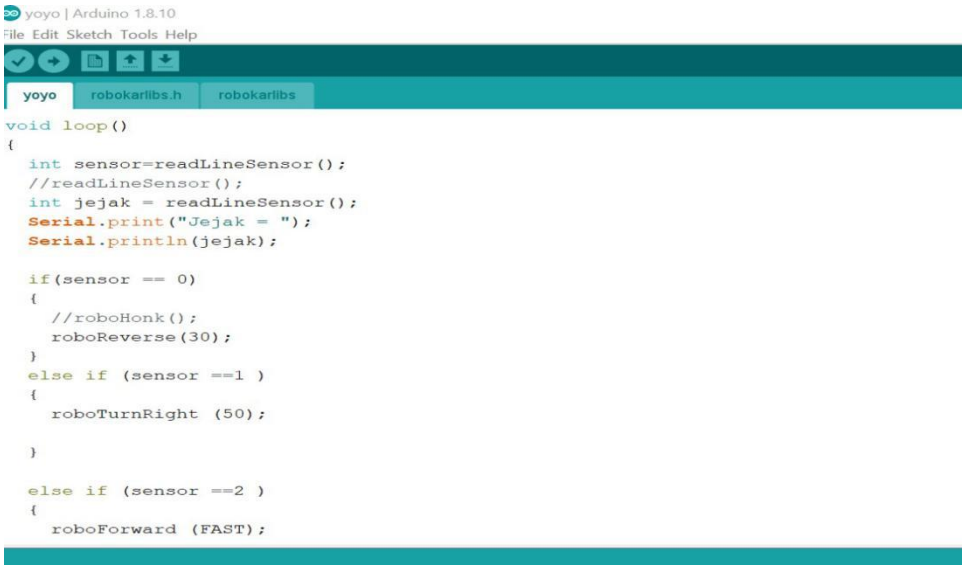


Figure 5: Example of the programme that we been used to detect the movements that needed to cross a long tour and transferred into the RoboKar after completed.

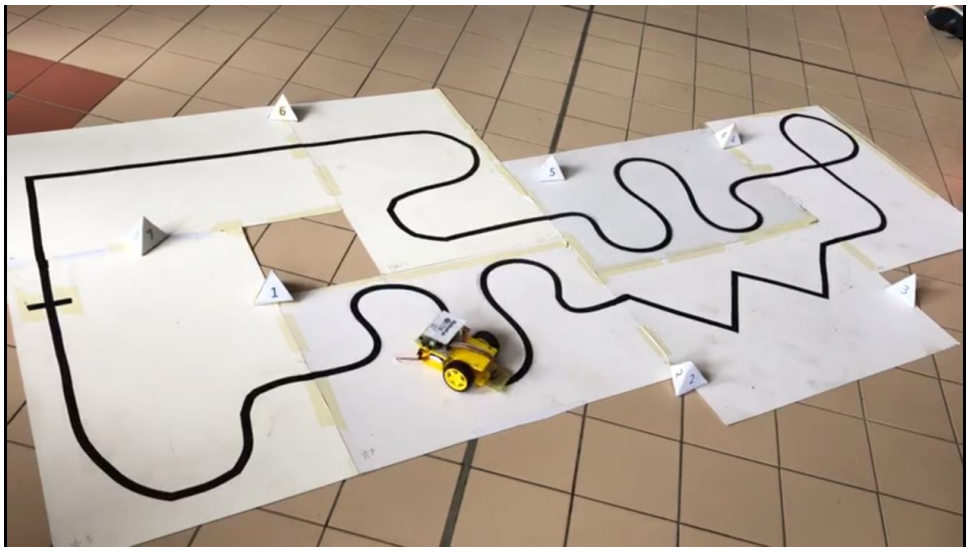


Figure 6: Our completed RoboKar on tested through the lines and corners during the competition.

After we make a test on ourselves, we join the competition at level 2 with other groups' RoboKar . We are so nervous while waiting for our turn because we saw a lot of RoboKar are perfectly complete the circuit's line less than 3 minutes. We all worried that suddenly our RoboKar can't detect the line or get error when we programmed. We been worried a lot and we trusted on our skills and of course our RoboKar. We are the fourth group. Our turn came to battle and our RoboKar successfully completed the while tour circuit only in 1 minute and 09 seconds. This is the best result of that day and our group got the first price in the battle. We won

This is a good ending of the industrial visit and learnt a lot of programmes on how to detect the lines and obstacles using the sensors by programmed it with the logic thought of a car or a robot moves when it detect something in front of it. Of course, this let us enjoy and understood how to programme a setting on a robot to move and become a technology in future starting from now.

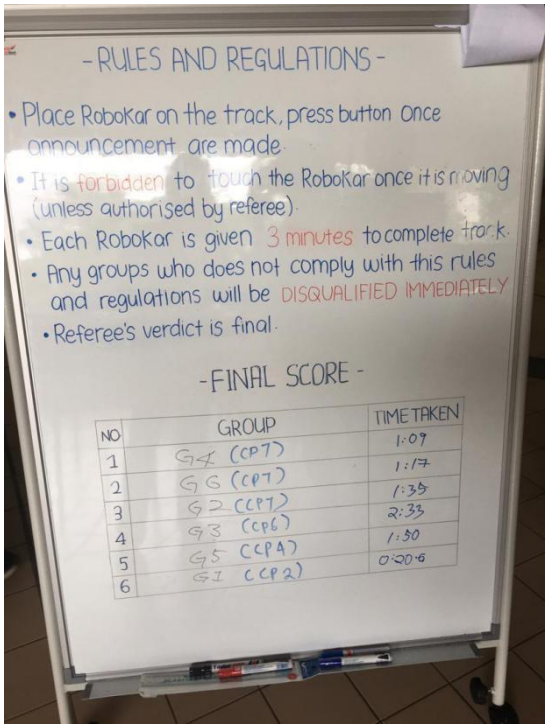


Figure 7: We won with the shortest time used in this battle.

Figure 8: Our team won the battle and get the 1st price and take picture with the Dayang Norhayati Abang Jawawi, Dr. Haswadi bin Hasan.

Reflections

What is your goal/dream with regarding to your course/program?

We are students from computer network and security course. Regarding our course, we have a goal which we want to be a successful person. Whether in pursuing our dream job as network engineer, hacker, IT security or system administrator. We want to be an employee with the ability to protect against the threats such as malware and viruses so that the program can run faster, smoother and also can stop unauthorized people from accessing the network and connected device. We want to be a competent employee that can solve any problem that we face.

How does this visit impact on your goal/dream with regard to your program?

After we visited ROBOKAR : ROBOT PROGRAMMING WORKSHOP, we can conclude this program do help in our programming and problem solving skill. It trains us in handling critical thinking that can be applied on our dream. No matter how many times we failed in programming our RoboKar, we did not easily give up to use ‘try and

error' method until we find the right coding for the RoboKar. Thus we learned that making errors, makes us more eager to accomplish something. We believe this method can enhance our competence in catching up to our goal/dream.

What is the action/improvement/plan necessary for you to improve your potential in the industry?

Nowadays Malaysian industry need a capable employee. As a future employee, we need to enhance our knowledge and skill in order to compete with other people in this industry. We should encourage ourselves to do more research and reading regarding our course. In addition, we plan to improve our skills on varies aspects such as communication skill, writing skill and teamwork skill.

The Task For Each Member

Name	Task
Angelica	Detail of the visit
Che Nurul Fathihah bt Mohd Hishamudin	Reflecion
Iffah Najihah binti Mhd Nizam	Reflection
Ng Pei Wen	Introduction
Syahmin Fa'izun Wazien binti Amlan	Task for each member
Teng Jia Jing	Detail of the visit