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| Name: J.A. Mujeeb |
| Student Reference Number: 10707284 |



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| Module Code: PUSL3108 | Module Name: Pervasive Computing | |
| Coursework Title: Pervasive Computing Coursework | | |
| Deadline Date: 15/05/2022 | | Member of staff responsible for coursework: Dr. Rasika Ranaweera |
| Programme: BSc (Hons) Plymouth Software Engineering | | |
| Please note that University Academic Regulations are available under Rules and Regulations on the University website [www.plymouth.ac.uk/studenthandbook](http://www.plymouth.ac.uk/studenthandbook). | | |
| Group work: please list all names of all participants formally associated with this work and state whether the work was undertaken alone or as part of a team. Please note you may be required to identify individual responsibility for component parts.  J.A. Mujeeb – 10707284  G.M.D.D. Ratnayake – 10707351  S.O. Perera – 10707315  N. S. De Alwis – 10707160  M. D. A. Medhavi – 10707278  P. P. L. Dilhani – 10709402  ***We confirm that we have read and understood the Plymouth University regulations relating to Assessment Offences and that we are aware of the possible penalties for any breach of these regulations. We confirm that this is the independent work of the group.***  Signed on behalf of the group: J.A. Mujeeb | | |
| Individual assignment: ***I confirm that I have read and understood the Plymouth University regulations relating to Assessment Offences and that I am aware of the possible penalties for any breach of these regulations. I confirm that this is my own independent work.***    Signed: | | |
| Use of translation software: failure to declare that translation software or a similar writing aid has been used will be treated as an assessment offence.  I \*have used/not used translation software.  If used, please state name of software………………………………………………………………… | | |
| **Overall mark \_\_\_\_\_% Assessors Initials \_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_** | | |

\*Please delete as appropriateSci/ps/d:/students/cwkfrontcover/2013/14

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| Name | Student ID | Contribution |
| J.A. Mujeeb | 10707284 | 16.7% |
| G.M.D.D. Ratnayake | 10707351 | 16.7% |
| S.O. Perera | 10707315 | 16.7% |
| N. S. De Alwis | 10707160 | 16.7% |
| M. D. A. Medhavi | 10707278 | 16.7% |
| P. P. L. Dilhani | 10709402 | 16.7% |

Part A –





Diagram

Description automatically generated

* 1. Electronic Toll Collection System (ETC) –

An Electronic Toll Collection System is the systematization of the automatic cashless toll fee collection for vehicles to use bridges, tunnels, lanes or roads.

It is a more prolific alternative than commonly generic toll booths.

Customers are able to automatically disburse the toll fee, where the payment is electronically debited from the account of the car owner. The toll gates to automatically open, eradicating the necessity of having to halt and perform manual remuneration while passing the toll gate.

ETC Systems alleviate the reduction of expressway traffic congestion with the adaptment of electronical user fee collection. Its usage also improves the environmental conditions.

ETC Systems are rapidly ameliorating the transportation industry when considering the saved time, improved efficiency and reduced traffic, noise and air pollution.

Discussion –

ETC Systems are rapidly ameliorating the transportation industry, becoming a bedrock for innovation, successfully substituting conventional toll booths.

Increases throughput. An openroad tolling ETC lane offers a significant increase in capacity over a manual lane and an automatic coin machine lane. • Decreases emissions. Researchers have modeled the impact on emissions of using ETC lanes. ETC lanes reduced hydrocarbons, carbon monoxide, and nitrogen oxide in the study area. • Is cost effective. ETC lanes are less expensive to build and operate than manual or automatic lanes.

ETC Systems notably increase the average vehicle throughput compared to normal toll booths, playing a role in congestion management.

congestion management, urban mobility, and multimodal transportation needs.

