Introduction to Software Engineering (F28SD) 2023-24

Specification of Coursework-2

NATS Major Incident – August 2023:
Reflections on a Safety Critical System Incident

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UK air traffic failure blamed on 'extremely rare' circumstances as CAA opens inquiry

Technical report confirms error triggered by flight plan caused chaos last week as more than 2,000 flights cancelled

Gwyn Topham *Transport correspondent*

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Wed 6 Sep 2023 07.00 BST

People waiting near the check-in desks at Gatwick airport on 28 August. Photograph: Carl Court/Getty Images

The Guardian Newspaper, September 2023.

THIS IS AN INDIVIDUAL PROJECT

While discussion with fellow students as to the general nature of this project is acceptable, it is critically important that the solution you adopt and report are completely your own work. The re-use of other peoples work is not permitted and if identified will be treated as a disciplinary matter. Information on plagiarism can be found via

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https://www.hw.ac.uk/students/studies/examinations/plagiarism.htm
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1 Introduction

F28SD is assessed 100% by coursework. The coursework is divided into 2 parts, this document specifies what is required for the second part – Coursework-2 – which counts for 20% of the overall course mark.

2 The tasks involved in Coursework-2

On Monday 28 August 2023, software systems that support the UK's *National Air Traffic Services* failed. The resulting delays to flights had significant negative impact on passengers wishing to fly.

  Your task is to research this major incident – both from the perspective of how the systems were designed to function as well as how the failure arose. You are required to document your findings in a **presentation style format**. Note that an actual presentation is not part of the assessment. In support of your research of this topic the following 3 sources are provided:

- *NATS Major Incident Preliminary Report: Flight Plan Reception Suite Automated (FPRSA-R) Sub-system Incident 28th August 2023.* Issued by NATS 4th September 2023:
  `https://publicapps.caa.co.uk/docs/33/NERL%20Major%20Incident%20Investigation%20Preliminary%20Report.pdf`
  (also available via the "Additional Reading Material" module on Canvas)

- NATS introduction to *Understanding Airspace:*
  `https://www.nats.aero/airspace/introduction/`

- AeroResource: *AeroResource UK Waypoints map:*
  `https://www.aeroresource.co.uk/resources/uk-waypoints-map/`

You are not, however, limited to the above resources. But all resources that you do make use of should be explicitly referenced within your presentation. Your presentation should be structured as follows:

D0: Your first slide:

  - The coursework title,
  - Your full name,
  - Your Degree Programme title,
  - Your Person Identification (Person ID)" (i.e. your H00XXXXXX code)
  - Your campus of study

D1: Describe the context to the "NATS Major Incident" that occurred on 28 August 2023. Your description should include the air traffic control processes that are relevant to understanding the incident. This should include the role of systems under the control of NATS as well as the system(s) external to NATS that played a role in the incident. The role that humans played in the air traffic control processes should also be covered. **(5-marks)** [5-slides max.]

D2: Describe the sequence of events that occurred on the 28 August 2023 that led to the system failures within NATS. Your description should include how NATS personnel attempted to recover from the incident as well as the immediate aftermath. **(5-marks)** [5-slides max.]

D3: Describe the short-term and longer-term actions that have/are being considered in order to prevent a recurrence of this incident. **(4-marks)** [4-slide max.]

D4: What software engineering lessons do you take away from the NAT Major Incident? **(3-marks)**
[3-slide max.]

D5: A list of ALL the sources that you have made use of in preparing your presentation. **(3-marks)**

Guidance: You should use diagrams and images wherever appropriate. You should make minimal use of quotes from other sources. That is, we are assessing your ability to describe the results of your research in your own words and using your own diagrams. As well as content, you are being assessed on the quality of your presentation, i.e. its completeness, accuracy, accessibility, visual impact and readability. Keep in mind you are being asked to produce a presentation and not a detailed report.

3   Submission and Deadline for Coursework-2

You are **required to submit ONE file**: A **presentation**, either using PowerPoint of a similar presentation tool – acceptable formats are PPT, PPTX or PDF.

The submission link can be found within the "Assessment" link of the F28SD "Course Navigation" panel. The **deadline** for submitting **Coursework-2** is **Monday 8 April 2024:**

15:30 Edinburgh (local time)

23:59 Malaysia (local time)

17:00 Dubai (local time)

Coursework-2 counts for 20% of the overall mark for the course. The standard penalty for the late submission of coursework will be applied unless evidence of Mitigating Circumstances is provided (see Undergraduate Programme Handbook for details).