UNIVERSITI MALAYA
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PEPERIKSAAN IJAZAH SARJANA MUDA SAINS KOMPUTER (KEJURUTERAAN PERISIAN)
EXAMINATION FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE (SOFTWARE ENGINEERING)

SESI AKADEMIK 2025/2026 : SEMESTER 1
ACADEMIC SESSION 2025/2026 : SEMESTER 1

WIF3005 : Penyelenggaraan dan Evolusi Perisian
WIF3005 : Framework-based Software Design and Development

Jan 2026 Masa : 1 minggu
Jan 2026 Time : 1 week

ARAHAN KEPADA CALON :
INSTRUCTIONS TO CANDIDATES :

(1) Peperiksaan ini mengandungi 1 soalan dengan jumlah 30 markah.
This examination consists of 1 question with a total of 30 marks.

(2) Calon dikehendaki menjawab semua soalan.
Candidate is required to answer all questions.

(3) Ini adalah Peperiksaan Bawa Pulang. Calon dibenarkan merujuk kepada nota kuliah, buku dan sebarang sumber dalam talian atau luar talian.
This is an Take-home Examination. Candidates are allowed to refer to lecture notes, book and any online or offline resources.

(4) Hantar jawapan anda bagi setiap soalan ke repositori yang disediakan (*Submission Repository*) sambil memastikan format penamaan yang betul: <nombor matrik>_<nama>_<nombor soalan>, sebagai contoh, WVA7008_Nana_Q1.
Submit your answers to each question in the provided repository (Submission Repository) while ensuring the correct naming format: <matric-number>_<your-name>_<question-number>, for example, WVA7008_Nana_Q1.

(5) Untuk Soalan 1:
For Question 1,

- Hantar **Dockerfile** dalam folder Dockerfile yang mengandungi satu komen yang menyatakan pautan ke repositori anda.
Submit Dockerfile in Dockerfile folder which include one comment that specify the link to your repository

- Hantar hanya satu fail PDF yang mengandungi bukti build dan ujian yang disahkan dalam folder BuildTest.
Submit one PDF only that contains proof of verified build and test in BuildTest folder

(6) Pastikan semua fail telah dikomit dan dihantar ke repositori sebelum masa peperiksaan tamat.
Make sure all files are committed and pushed to the repository before the exam time ended.

(7) **Penting:** Menipu (contohnya; menggunakan imej pra-bina atau log serta tangkapan skrin palsu) akan menyebabkan pemotongan 30 markah.
Important: *Cheating (e.g; using pre-built images or fake logs and snapshots) will result in a 30 marks deduction.*

(Kertas soalan ini mengandungi 1 soalan dalam 2 halaman yang dicetak)
(This question paper consists of 2 questions on 5 printed pages)

1. Pindahkan sistem perisian yang sedia ada ke dalam persekitaran yang menggunakan kontena dengan Docker. Ini termasuk mencipta Dockerfile dan menyediakan konfigurasi yang diperlukan untuk menjalankan aplikasi anda dalam kontena Docker.

   Migrate an existing software system into a containerized environment using Docker. This includes creating a Dockerfile and setting up the necessary configuration to run your application in a Docker container.

   a. Pilih Projek anda:
      Select your Project:

      i. Pilihan 1: Gunakan repositori projek kumpulan anda yang telah dipilih sebelum ini.
         Option 1 : Use your previously selected group project repository.

      ii. Pilihan 2: Gunakan repositori sampel yang disediakan dalam Rajah 1.
         Option 2 : Use the sample repository provided in Figure 1.

      iii. Pilihan 3: Gunakan repositori projek tahun akhir anda.
         Option 3 : Use your final year project repository.

   b. Cipta Dockerfile:
      Create a Dockerfile:

      i. Di direktori akar projek anda, cipta Dockerfile.
         In the root directory of your project, create a Dockerfile.

      ii. Pastikan Dockerfile anda mengandungi semua yang diperlukan (Imej asas, direktori kerja, kebergantungan, port, dan arahan untuk dijalankan).
         Ensure your Dockerfile include all required (Base image, working directory, dependencies, port, and run command)

   (15 markah/*marks*)

c. Bina dan uji Imej Docker:
Build and test the the Docker Image:

i. Bina menggunakan arahan sampel ini:
Build using this sample command:

```
docker build -t your-image-name .
```

ii. Jalankan kontena Docker menggunakan arahan sampel ini:
Run the Docker container using this sample command:

```
docker run -p 5000:5000 your-image-name
```

iii. Sahkan aplikasi boleh diakses dalam pelayar atau gunakan curl untuk menguji.
Verify the application is accessible in a browser or use curl to test.

(15 markah/*marks*)

TAMAT
END

APPENDIX
Rubric

Que	***Criteria***	***Excellent (A)***	***Good (B)***	***Satisfactory (C)***	***Marks***
1	*Dockerfile Creation*	*The Dockerfile is complete and well-structured, including all required elements.* ***(15 marks)***	*The Dockerfile is mostly complete but may have minor issues or missing elements.* ***(12 marks)***	*The Dockerfile is incomplete, missing essential elements, or has major issues.* ***(9-10 marks)***	*15%*
	Building, Testing, and Verifying the Docker Image	*The Docker image builds and runs correctly with no errors, and the application is successfully verified in a browser or with curl.* ***(15 marks)***	*The Docker image builds and runs with minor issues, and the application is mostly accessible.* ***(12 marks)***	*The Docker image builds but encounters errors when running, or the application is not accessible.* ***(9-10 marks)***	*15%*