**Birla Institute of Technology & Science, Pilani**

**Work Integrated Learning Programmers Division**

**First Semester 2022-2023**

**Mid-Semester Test**

**(EC-2 Regular)**

Course No. : SE ZG585

Course Title : Cross-Platform Application Development

Nature of Exam : Open Book

Weightage : 30%

No. of Pages = 2

# No. of Questions = 4

Duration : 2 Hours

Date of Exam : 23/09/2022 (FN)

Note to Students:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.
4. Answer in brief: **[2 \* 3 = 6]**
5. Explain with an example, relationship between microservices, Docker and kubernetes.
6. Consider a case of composite pattern - where an application fetches data from different APIs. For example, a dashboard that retrieves the required data from different sources such as logging services APIs, cloud based backends for consumption numbers, third-party analytics services to capture end-user interactions etc. Which type of API design style will be suitable for this scenario? Justify?
7. Serverless computing can be thought of as no servers instead of less servers. Justify/Invalidate.
   1. Rishikesh is an enthusiastic traveler. When travelling he uses his DSLR camera a lot to capture the pictures of the surroundings. Also he uses these pictures in blogposts which narrates his journeys and experiences of the places which he has visited in the past. As his blogs are very informative, many readers find them quite useful when they plan their journeys to those places, hence many feedbacks are also shared by the readers.

Answer the following sub-questions based on the above narrative: **[2 + 2 + 2 = 6]**

1. What type of data is captured in this narrative?
2. Whether a file based system will be appropriate choice for such type of data? Why?
3. What other type of data storage will be suitable for such type of data? Justify with example.
   1. Let’s assume that you need to design a mobile app for English language dictionary. It should serve as English language learning tool and provide word games built for every level of learner.

With trusted definitions and synonyms plus word puzzles, language quizzes, and spelling quizzes, this English dictionary and thesaurus app for Android should be optimized with your mobile device in mind to help you learn English or improve your English vocabulary. In addition to the trusted reference content from Dictionary.com and Thesaurus.com, this education app should include:

* Word Puzzle ► To Improve your vocabulary with fun spelling quizzes and vocabulary challenges.
* Word of the Day ► Learn a new word each day and expand your vocabulary education.
* Synonyms ► Get thesaurus content alongside your dictionary definitions.
* Audio pronunciations ► Never mispronounce another word.
* Voice search ► Find the definitions you’re looking for anywhere, anytime. The app even offers up English spelling help. Not sure how a word is spelled? Say it out loud, and this app will find it for you.
* Grammar help ► Get grammar tips, word usage, and more to improve your writing.
* Favorite words and search history ► Customize your recently searched word list, and never forget the newest words you’ve learned
* Learner’s dictionary ► Includes extra information about word usage for English learners

Answer the following sub questions based on this scenario: **[2 + 2 + 1 + 2 + 2 + 1 = 10]**

1. What will be the type of mobile dictionary application? Justify briefly.
2. What features of the mobile phone will be leveraged by this dictionary application?
3. What framework and programming language will be suitable for development of this type of application?
4. If this application needs to work in offline manner, then using a file for storing dictionary data will be an appropriate choice? Justify.
5. Every day when user first time opens up the application, a new “word of day” needs to be shown to him. Describe the factors that you will consider while designing this feature?
6. Whether using any Backend-as-a-Service (BaaS) for dictionary app will make any difference?
   1. For the below mentioned cases, identify a suitable architectural style (discussed in the class) and provide an architectural block diagram and short description narrating the request-response flow between various components involved. **[8]**
7. Yours is a unified payment interface that enables transfer of money from one back account to another account and also has plans in mind to extend it for transfer of money between bank account and credit cards.
8. Yours is credit score management system that tracks the loans taken by the customer and updates the credit score on regular basis when an EMI is paid by the customer
9. Yours is a business that wants to adapt mobile-only application for supporting the business transactions and does not want to take headache associated with management and maintenance of infrastructure required for the application
10. You quickly need to build a prototype of the product before embarking on a more ambitious project, its less complex in nature and the team has expertise into conventional development and deployment approaches

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