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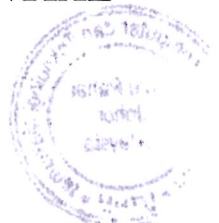
**FINAL EXAMINATION
SEMESTER I
SESSION 2017/2018**

COURSE NAME : MOBILE APPLICATION
DEVELOPMENT
COURSE CODE : BIM30603
PROGRAMME CODE : BIM
EXAMINATION DATE : DECEMBER 2017 / JANUARY 2018
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS.

TERBUKA

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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Q1 Given the following scenario:

You are required to develop an interactive mobile learning application for secondary school. The application should be able to track the learning progress of each student. The learning progress can be viewed by parents and teachers. The application should be able to run on both Android and iOS. You are given only 4 months to deliver the application.

- (a) Design the learning progress tracking interface of the mobile application. (8 marks)
- (b) Suggest the best mobile application development framework for developing the required application. (4 marks)

Q2 Given the following code segment:

```
public class CustomView extends View {
    ...
    public void onDraw( Canvas canvas ) {
        super.onDraw( canvas );
        Paint paint = new Paint( );
    }
    ...
}
```

Figure Q2

- (a) Inside `onDraw`, draw a full red circle centered at (100, 200) and with radius 50. (4 marks)
- (b) Inside `onDraw`, draw a bitmap somewhere on the screen from an image file named `uthm.png` located in the `drawable` directory. (4 marks)

TERBUKA**Q3** Given the following scenario:

Android Runtime (ART), introduced as a developer option in Android 4.4, is the default Android runtime for Android 5.0 and beyond. The Dalvik runtime is no longer maintained or available and its byte-code format is now used by ART.

- (a) Describe **TWO (2)** improvements made by the ART concurrent mark sweep garbage collection plan compared to Dalvik. (4 marks)
- (b) Describe **TWO (2)** tools for analyzing garbage collection correctness problems. (4 marks)

Q4 Given the following Figure Q4(a) and Figure Q4(b):

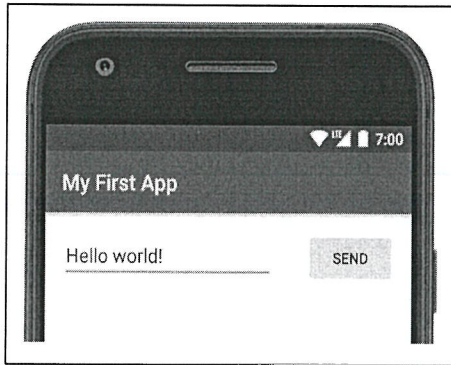


Figure Q4(a)

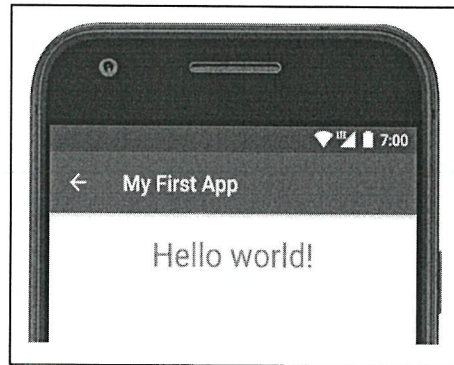


Figure Q4(b)

- (a) Complete the following code segment that respond to the `send` button in Figure Q4(a).

```
public class MainActivity extends AppCompatActivity {
    public static final String EXTRA_MESSAGE =
        "com.merg.firstapp.MESSAGE";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    /** Called when the user taps the Send button */
    public void

}
}
```



(6 marks)

- (b) Complete the following `DisplayMessageActivity.java` code to in Figure Q4(b) to display the message that was passed by the code in Q4(a).

```
@Override
protected void onCreate(Bundle savedInstanceState) {

}
}
```

(6 marks)

Q5 Given the following scenario:

You are required to develop an interactive event management application. The application will give the users all important information about the event such as date, time, dress code, location and the host.

- (a) Explain the services that allow you to include maps and customised mapping information in your app.

(2 marks)

- (b) Complete the following code segment

```

package _____ (i) _____ ;
import com.google.android.gms.maps. _____ (ii) _____ ;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;

public class MapsActivity
    extends AppCompatActivity implements _____ (iii) _____ {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_maps);
        SupportMapFragment mapFragment = ( _____ (iv) _____ )
            getSupportFragmentManager().findFragmentById(R.id.map);
        _____ (v) _____ .getMapAsync(this);
    }

    @Override
    public void onMapReady( _____ (vi) _____ mMap) {
        LatLng UTHM = new LatLng(1.86,103.08)
        mMap.addMarker(new
            MarkerOptions().position(UTHM).title("FSKTM, UTHM"));
        mMap.moveCamera(CameraUpdateFactory.newLatLng(uthm);
    }
}

```

(6 marks)



- Q6** (a) List **THREE (3)** types of testing that should occur in the mobile application development life cycle.

(3 marks)

- (b) Elaborate **THREE (3)** stages of stabilization process during mobile application development.

(9 marks)

Q7 Given the following Figure Q7:

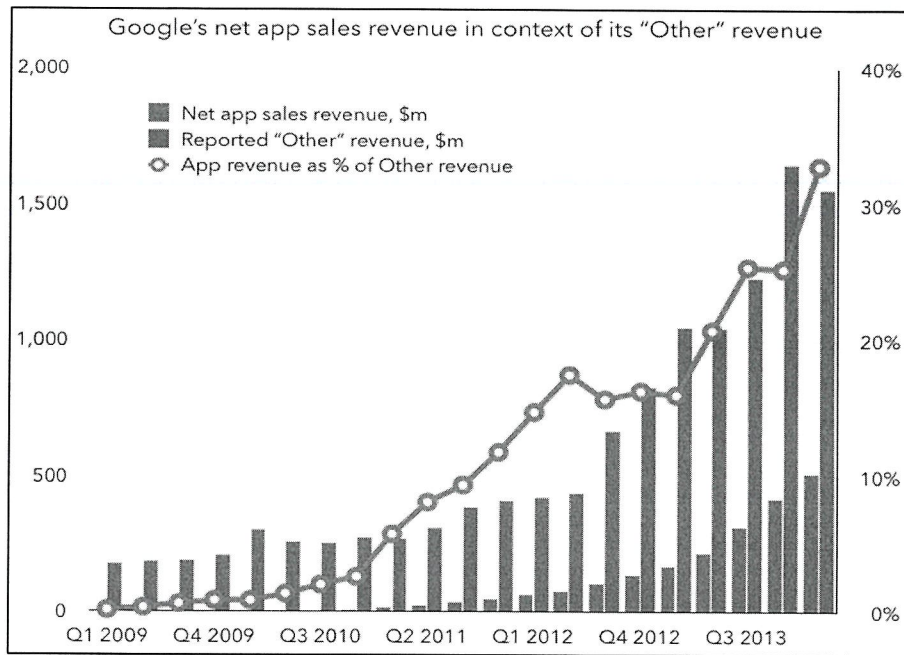


Figure Q7

- (a) Discuss **TWO (2)** driving factors of increasing revenue from mobile application market. (6 marks)
- (b) Discuss **TWO (2)** marketing strategies to promote a mobile apps. (6 marks)



Q8 Given the following scenario:

Global revenues from mobile applications are anticipated to grow by 962.5% between 2011 and 2017. It is estimated that due to support of existing and new market to usage levels of apps, mobile application will be a \$100 billion USD industry by the end of 2020. Among of the mobile application development focus are Internet of Things (IoT), enterprise, cloud computing and Augmented/Virtual Reality.

- (a) Explain the importance of mobile application in Internet of Things (IoT) system. (2 marks)
- (b) Discuss **TWO (2)** factors for the recent advancement of enterprise applications. (6 marks)

- END OF QUESTION -

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