



FACULTY OF SCIENCE AND INFORMATION TECHNOLOGY
OBJECT ORIENTED PROGRAMMING

TEB1043

Application name: EduKids

Prepared by:

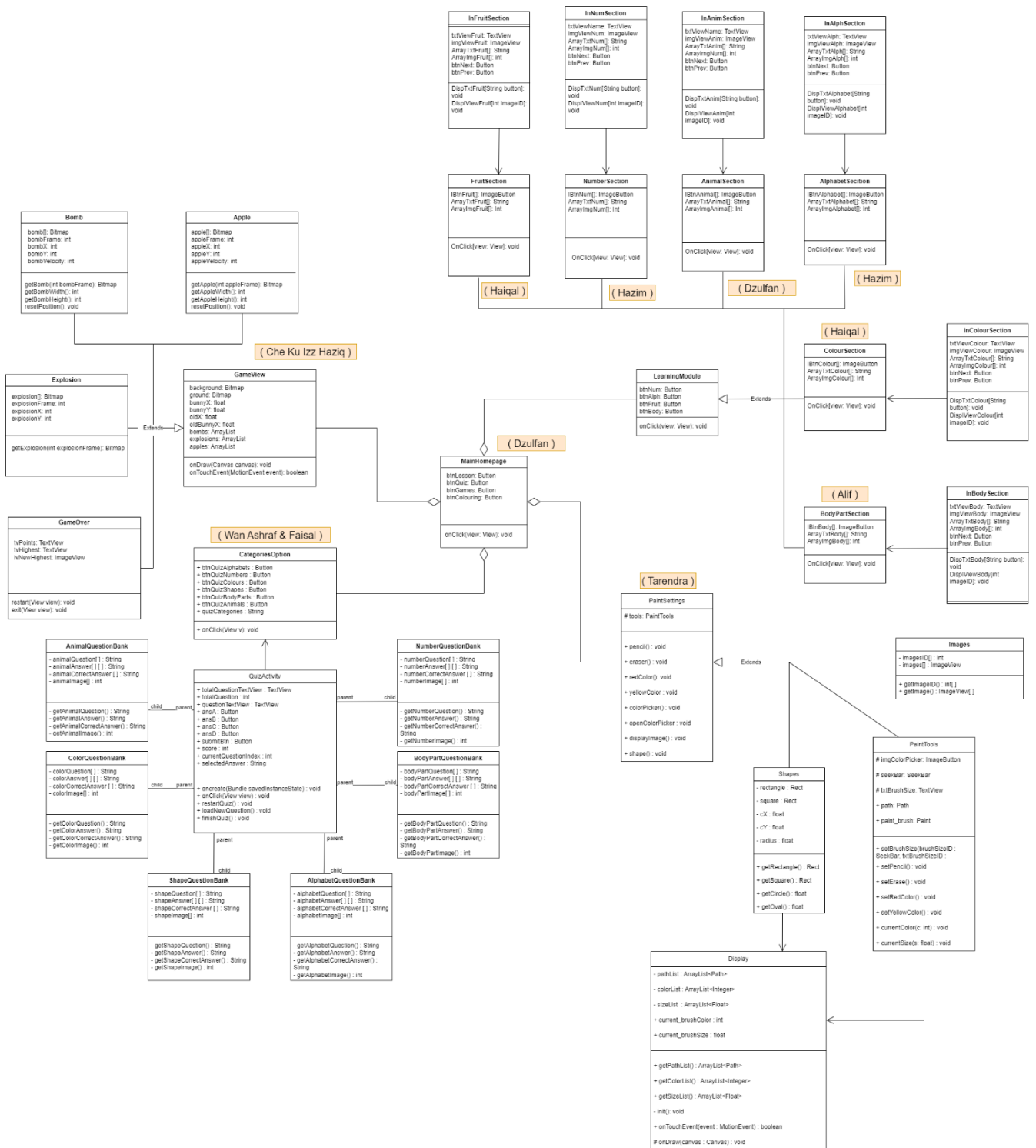
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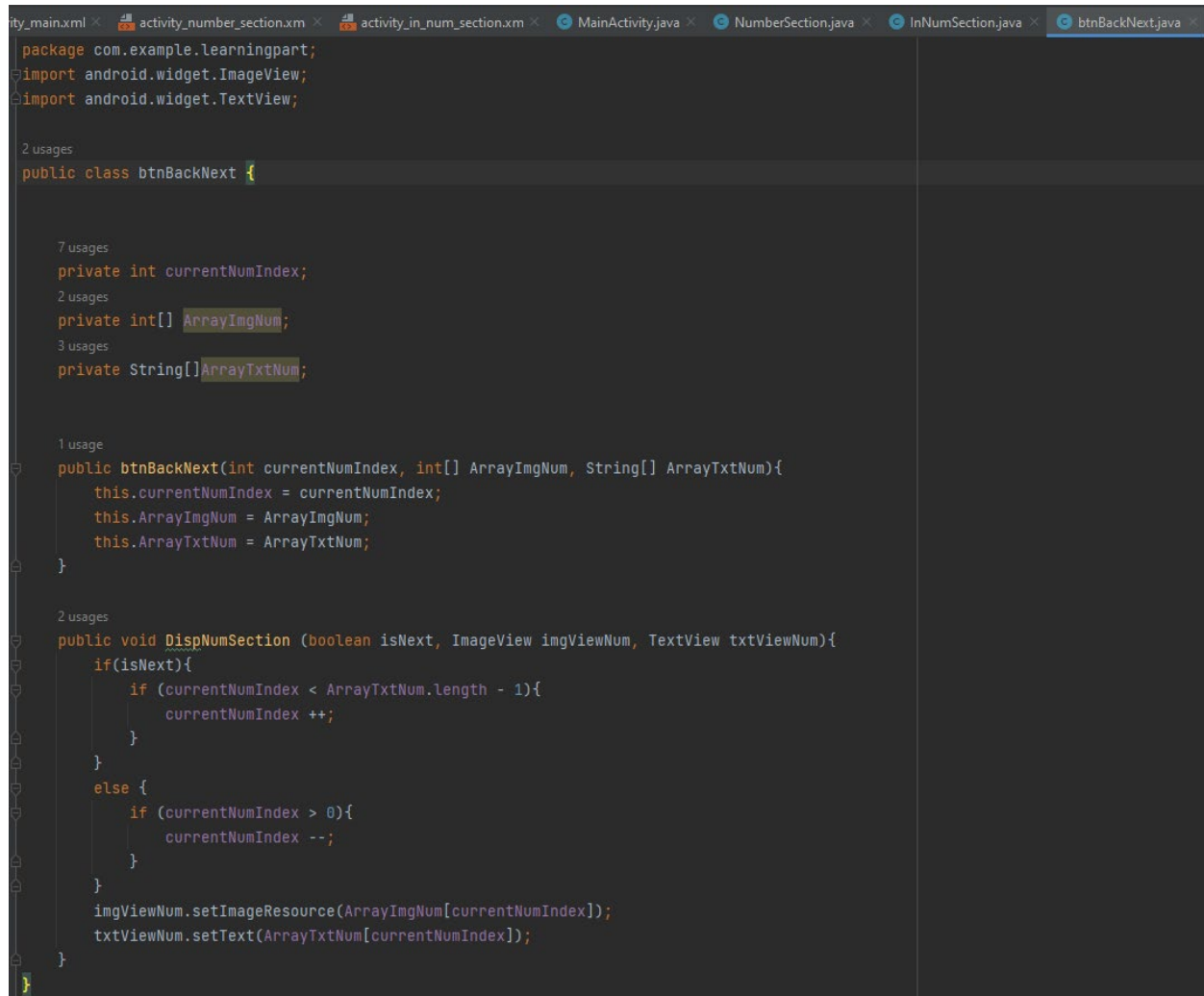
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UML Design



Program Codes

1) Learning Feature



```
ity_main.xml × activity_number_section.xml × activity_in_num_section.xml × MainActivity.java × NumberSection.java × InNumSection.java × btnBackNext.java ×  
package com.example.learningpart;  
import android.widget.ImageView;  
import android.widget.TextView;  
  
2 usages  
public class btnBackNext {  
  
    7 usages  
    private int currentNumIndex;  
    2 usages  
    private int[] ArrayImgNum;  
    3 usages  
    private String[] ArrayTxtNum;  
  
    1 usage  
    public btnBackNext(int currentNumIndex, int[] ArrayImgNum, String[] ArrayTxtNum){  
        this.currentNumIndex = currentNumIndex;  
        this.ArrayImgNum = ArrayImgNum;  
        this.ArrayTxtNum = ArrayTxtNum;  
    }  
  
    2 usages  
    public void DispNumSection (boolean isNext, ImageView imgViewNum, TextView txtViewNum){  
        if(isNext){  
            if (currentNumIndex < ArrayTxtNum.length - 1){  
                currentNumIndex ++;  
            }  
        }  
        else {  
            if (currentNumIndex > 0){  
                currentNumIndex --;  
            }  
        }  
        imgViewNum.setImageResource(ArrayImgNum[currentNumIndex]);  
        txtViewNum.setText(ArrayTxtNum[currentNumIndex]);  
    }  
}
```

```
activity_number_section.xml × activity_in_num_section.xml × MainActivity.java × NumberSection.java × InNumSection.java ×

2 usages
NumberSection numSection = new NumberSection();
4 usages
String[] ArrayTxtNum = numSection.ArrayTxtNum;
2 usages
int[] ArrayImgNum = numSection.ArrayImgNum;

2 usages
private Button btnNext;
2 usages
private Button btnPrev;
4 usages
private int currentNumIndex = 0;
3 usages
private btnBackNext ButtonBackNext;

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

    //Assign variables to its ID and layout
    imgViewNum = findViewById(R.id.imageView);
    txtViewNum = findViewById(R.id.txtViewNum);
    btnNext = findViewById(R.id.btnNext);
    btnPrev = findViewById(R.id.btnPrev);

    Intent intent = getIntent();

    currentNumIndex = getCurrentIndex(intent.getStringExtra("txtNum"));

    DispImageNum(ArrayImgNum[currentNumIndex]);
    DispTxtNum(ArrayTxtNum[currentNumIndex]);

    ButtonBackNext = new btnBackNext(currentNumIndex, ArrayImgNum, ArrayTxtNum);

    btnNext.setOnClickListener(new View.OnClickListener() { // Button next setup
        @Override
        public void onClick(View view) {
```

```

activity_number_section.xml × activity_in_num_section.xml × MainActivity.java × NumberSection.java × InNumSection.java × btnBackNext.java ×
private ImageButton[] IBtnNum = new ImageButton[15];
2 usages
public String[] ArrayTxtNum = {"ONE", "TWO", "THREE", "FOUR", "FIVE", "SIX", "SEVEN", "EIGHT", "NINE", "TEN", "ELEVEN", "TWELVE", "THIRTEEN", "FOURTEEN", "FIFTEEN"};
2 usages
public int[] ArrayImgNum = {R.drawable.one, R.drawable.two, R.drawable.three, R.drawable.four, R.drawable.five, R.drawable.six, R.drawable.seven, R.drawable.eight, R.drawable.nine, R.drawable.ten, R.drawable.eleven, R.drawable.twelve, R.drawable.thirteen, R.drawable.fourteen, R.drawable.fifteen};

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

    //Initialize ImageButton array
    IBtnNum[0] = findViewById(R.id.btnOne);
    IBtnNum[1] = findViewById(R.id.btnTwo);
    IBtnNum[2] = findViewById(R.id.btnThree);
    IBtnNum[3] = findViewById(R.id.btnFour);
    IBtnNum[4] = findViewById(R.id.btnFive);
    IBtnNum[5] = findViewById(R.id.btnSix);
    IBtnNum[6] = findViewById(R.id.btnSeven);
    IBtnNum[7] = findViewById(R.id.btnEight);
    IBtnNum[8] = findViewById(R.id.btnNine);
    IBtnNum[9] = findViewById(R.id.btnTen);
    IBtnNum[10] = findViewById(R.id.btnEleven);
    IBtnNum[11] = findViewById(R.id.btnTwelve);
    IBtnNum[12] = findViewById(R.id.btnThirteen);
    IBtnNum[13] = findViewById(R.id.btnFourteen);
    IBtnNum[14] = findViewById(R.id.btnFifteen);

    //loop through the array and set OnClickListener for each button;
    for (int i=0; i<IBtnNum.length; i++){
        int index = i;
        IBtnNum[i].setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                //Create new intent to open InNumSection activity
                Intent intent = new Intent( packageContext: NumberSection.this, InNumSection.class);
                intent.putExtra( name: "imageNum", ArrayImgNum[index]); // Pass the textView
                intent.putExtra( name: "txtNum", ArrayTxtNum[index]); // Pass the imageView
            }
        });
    }
}

```

MainActivity.java

```

package com.example.learningpart;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageButton;

3 usages
public class MainActivity extends AppCompatActivity {

    2 usages
    private Button btnNum; // Button to enter NUMBER Module

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

        btnNum = findViewById(R.id.btnNumber); // find ID for ImageButton Number

        btnNum.setOnClickListener(new View.OnClickListener() { // Method to enter NUMBER MODULE
            @Override
            public void onClick(View view) {
                Intent intent = new Intent( packageContext: MainActivity.this, NumberSection.class);
                startActivity(intent);
            }
        });
    }
}

```

2) Quiz feature

```
public void onClick(View view) {

    ansA.setBackgroundColor(android.graphics.Color.WHITE);
    ansB.setBackgroundColor(android.graphics.Color.WHITE);
    ansC.setBackgroundColor(android.graphics.Color.WHITE);
    ansD.setBackgroundColor(android.graphics.Color.WHITE);

    Button clickedButton = (Button) view;
    if(clickedButton.getId()==R.id.submit_btn){
        if(selectedAnswer.equals(QuestionAnswer.correctAnswers[currentQuestionIndex])){
            score++;
        }
        currentQuestionIndex++;
        loadNewQuestion();
    }else{
        //choices button clicked
        selectedAnswer = clickedButton.getText().toString();
        clickedButton.setBackgroundColor(Color.MAGENTA);
    }
}

}

3 usages
void loadNewQuestion(){

    if(currentQuestionIndex == totalQuestion ){
        finishQuiz();
        return;
    }

    questionTextView.setText(QuestionAnswer.question[currentQuestionIndex]);
    ansA.setText(QuestionAnswer.choices[currentQuestionIndex][0]);
    ansB.setText(QuestionAnswer.choices[currentQuestionIndex][1]);
    ansC.setText(QuestionAnswer.choices[currentQuestionIndex][2]);
    ansD.setText(QuestionAnswer.choices[currentQuestionIndex][3]);
}

}
```

```
by_main.xml Quiz.java MainActivity.java Animals.java Color.java QuestionAnswer.java
package com.paradeez.myapplication;

public class Animals {

    public static String question[] = {
        "What animal is this?",
        "Do you know the name of the animal?",
        "Could you identify the animal by name?",
        "What do you call this animal?",
        "What is the name of the above animal?"
    };

    public static String choices[][] = {
        {"Cat", "Bird", "Goat", "Cow"},
        {"Armadillo", "Cat", "Giraffe", "Elephant"},
        {"Duck", "Horse", "Dog", "Chicken"},
        {"Rabbit", "Grasshopper", "Dolphin", "Bee"},
        {"Fish", "Lion", "Snake", "Deer"},
        {"Monkey", "Gorilla", "Bat", "Bear"},
        {"Bear", "Cat", "Giraffe", "Rabbit"},
        {"Rabbit", "Fox", "Fish", "Bee"}
    };

    public static String correctAnswers[] = {
        "Goat",
        "Giraffe",
        "Chicken",
        "Rabbit",
        "Lion",
        "Monkey",
        "Bear",
        "Fox"
    };
}
```



```
y_main.xml x Quiz.java x MainActivity.java x Animals.java x Color.java x QuestionAnswer.java x
package com.paradeez.myapplication;

public class Color {
    private String colorQuestion[] = {
        "What color is this?",
        "State the color for the object.",
        "What is the color shown above?"
    };

    private String colorAnswer[][] = {
        {"Green", "Blue", "Yellow", "Purple"},
        {"Orange", "Brown", "Red", "Blue"},
        {"Black", "White", "Purple", "Blue"},
        {"Gray", "Green", "Red", "Brown"},
        {"White", "Yellow", "Orange", "Gray"}
    };

    private String colorCorrectAnswer[] = {
        "Green",
        "Red",
        "White",
        "Brown",
        "Gray"
    };
}
```

3) Game feature

```
no usages
public Bomb(Context context) {
    bomb[0] = BitmapFactory.decodeResource(context.getResources(), R.drawable.bomb0);
    bomb[1] = BitmapFactory.decodeResource(context.getResources(), R.drawable.bomb1);
    bomb[2] = BitmapFactory.decodeResource(context.getResources(), R.drawable.bomb2);
    bomb[3] = BitmapFactory.decodeResource(context.getResources(), R.drawable.bomb3);
    random = new Random();
    resetPosition();
}

no usages
public Bitmap getBomb(int bombFrame) { return bomb[bombFrame]; }

1 usage
public int getBombWidth() { return bomb[0].getWidth(); }

no usages
public int getBombHeight() { return bomb[0].getHeight(); }

1 usage
public void resetPosition() {
    bombX = random.nextInt(GameView.dWidth - getBombWidth());
    bombY = -200 + random.nextInt(600) * -1;
    bombVelocity = 25 + random.nextInt(10);
}
```

```
no usages
public class MainActivity extends AppCompatActivity {

    no usages
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        getWindow().addFlags(WindowManager.LayoutParams.FLAG_KEEP_SCREEN_ON);
    }

    no usages
    public void startGame(View view) {
        GameView gameView = new GameView(this);
        setContentView(gameView);
    }
}
```

```

public GameView(Context context) {
    super(context);
    this.context = context;
    background = BitmapFactory.decodeResource(getResources(), R.drawable.game_bg);
    ground = BitmapFactory.decodeResource(getResources(), R.drawable.ground_game);
    bunny = BitmapFactory.decodeResource(getResources(), R.drawable.bunny);
    Display display = ((Activity) getContext()).getWindowManager().getDefaultDisplay();
    Point size = new Point();
    display.getSize(size);
    dWidth = size.x;
    dHeight = size.y;
    rectBackground = new Rect(0,0,dWidth,dHeight);
    rectGround = new Rect(0, dHeight - ground.getHeight(), dWidth, dHeight);
    handler = new Handler();
    runnable = new Runnable() {
        no usages
        @Override
        public void run() { invalidate(); }
    };
    textPaint.setColor(Color.rgb(255,165,0));
    textPaint.setTextSize(TEXT_SIZE);
    textPaint.setTextAlign(Paint.Align.LEFT);
    textPaint.setTypeface(ResourcesCompat.getFont(context, R.font.rackis));
    healthPaint.setColor(Color.GREEN);
    random = new Random();
    bunnyX = dWidth / 2 - bunny.getWidth() / 2;
    bunnyY = dHeight - ground.getHeight() - bunny.getHeight();
    bombs = new ArrayList<>();
    explosions = new ArrayList<>();
}

```

```

@Override
public void onCreate(@Nullable Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.game_over);
    tvPoints = findViewById(R.id.tvPoints);
    tvHighest = findViewById(R.id.tvHighest);
    ivNewHighest = findViewById(R.id.ivNewHighest);
    int points = getIntent().getExtras().getInt("points");
    tvPoints.setText("" + points);
    sharedPreferences = getSharedPreferences("my_pref", 0);
    int highest = sharedPreferences.getInt("highest", 0);
    if (points > highest) {
        ivNewHighest.setVisibility(View.VISIBLE);
        highest = points;
        SharedPreferences.Editor editor = sharedPreferences.edit();
        editor.putInt("highest", highest);
        editor.commit();
    }
    tvHighest.setText("" + highest);
}

no usages
public void restart(View view) {
    Intent intent = new Intent(GameOver.this, MainActivity.class);
    startActivity(intent);
    finish();
}

no usages
public void exit(View view) { finish(); }
}

```

4) Painting feature

a) PaintSettings.java

```
2
3  import static com.example.oopprojectcolouringapp.Display.current_brushColor;
4  import static com.example.oopprojectcolouringapp.PaintTools.*;
5
6  import androidx.appcompat.app.AppCompatActivity;
7
8  import android.graphics.Color;
9  import android.graphics.Paint;
10 import android.os.Bundle;
11 import android.view.View;
12 import android.widget.ImageButton;
13 import android.widget.SeekBar;
14 import android.widget.TextView;
15
16 import yuku.ambilwarna.AmbilWarnaDialog;
17
18 public class PaintSettings extends AppCompatActivity{
19
20     //Section A: Data attributes & objects
21     PaintTools tools = new PaintTools();
22
23     //Section B: Operations
24     //-----
25     @Override
26     protected void onCreate(Bundle savedInstanceState) {
27         super.onCreate(savedInstanceState);
28         setContentView(R.layout.activity_main);
29
30
31         setBrushSize(findViewById(R.id.brushSize), findViewById(R.id.txtBrushSize));
32     }
```

```
31         setBrushSize(findViewById(R.id.brushSize), findViewById(R.id.txtBrushSize));
32     }
33
34     private void openColorPicker() {
35
36         AmbilWarnaDialog ambilWarnaDialog = new AmbilWarnaDialog(context, this, current_brushColor, new AmbilWarnaDialog.OnAmbilWarnaListener() {
37             @Override
38             public void onCancel(AmbilWarnaDialog dialog) {
39
40             }
41
42             @Override
43             public void onOk(AmbilWarnaDialog dialog, int color) {
44                 current_brushColor = color;
45                 paint_brush.setColor(color);
46                 currentColor(paint_brush.getColor()); //----<<<<<<
47             }
48         });
49         ambilWarnaDialog.show();
50     }
51
52     public void pencil(View view) {
53         //tools.setPencil();
54         setPencil();
55     }
56
57     public void eraser(View view) {
58         //tools.setEraser();
59         setEraser();
60     }
```

```

61
62     public void redColor(View view) {
63         //tools.setRedColor();
64         setRedColor();
65     }
66
67     public void yellowColor(View view) {
68         //tools.setYellowColor();
69         setYellowColor();
70     }
71
72     public void colorPicker(View view) {
73         openColorPicker();
74     }
75 }
76
77 }
78

```

b) PaintTools.java

```

2
3 import static com.example.oopprojectcolouringapp.Display.getColorList;
4 import static com.example.oopprojectcolouringapp.Display.current_brushColor;
5 import static com.example.oopprojectcolouringapp.Display.current_brushSize;
6 import static com.example.oopprojectcolouringapp.Display.getPathList;
7 import static com.example.oopprojectcolouringapp.Display.getSizeList;
8
9 import androidx.appcompat.app.AppCompatActivity;
10
11 import android.content.Context;
12 import android.graphics.Color;
13 import android.graphics.Paint;
14 import android.graphics.Path;
15 import android.os.Bundle;
16 import android.util.AttributeSet;
17 import android.view.View;
18 import android.widget.Button;
19 import android.widget.ImageButton;
20 import android.widget.SeekBar;
21 import android.widget.TextView;
22
23 import yuku.ambilwarna.AmbilWarnaDialog;
24
25 public class PaintTools extends PaintSettings {
26
27     //Section A: Declare the data attributes
28     protected static ImageButton imgColorPicker;
29     protected static SeekBar seekBar;
30     protected static TextView txtBrushSize;
31     //int defaultColor;

```

```

32
33     public static Path path = new Path();
34     public static Paint paint_brush = new Paint();
35
36     //Section B: Operations
37     //-----
38     public static void setBrushSize(SeekBar brushSizeID, TextView txtBrushSizeID) {
39         seekBar = brushSizeID;
40         txtBrushSize = txtBrushSizeID;
41
42         seekBar.setProgress(20);
43         txtBrushSize.setText((int) current_brushSize + "dp");
44
45         seekBar.setOnSeekBarChangeListener(new SeekBar.OnSeekBarChangeListener() {
46             @Override
47             public void onProgressChanged(SeekBar seekBar, int i, boolean b) {
48                 txtBrushSize.setText(i + "dp");
49                 current_brushSize = i;
50                 paint_brush.setStrokeWidth(i);
51                 currentSize(paint_brush.getStrokeWidth());
52                 seekBar.setMax(50);
53             }
54
55             @Override
56             public void onStartTrackingTouch(SeekBar seekBar) {
57
58             }
59
60

```

```

60
61         @Override
62         public void onStopTrackingTouch(SeekBar seekBar) {
63
64         }
65     });
66 }
67
68 public static void setPencil(){
69     paint_brush.setColor(Color.BLACK);
70     currentColor(paint_brush.getColor());
71 }
72
73 public static void setEraser(){
74     getPathList().clear();
75     getColorList().clear();
76     getSizeList().clear();
77     path.reset();
78 }
79
80 public static void setRedColor(){
81     paint_brush.setColor(Color.RED);
82     currentColor(paint_brush.getColor());
83 }
84
85 public static void setYellowColor(){
86     paint_brush.setColor(Color.YELLOW);
87     currentColor(paint_brush.getColor());
88 }
89

```



```

90     public static void currentColor(int c){
91         current_brushColor = c;
92         path = new Path();
93     }
94
95     //Brush size
96     public static void currentSize(float s){
97         current_brushSize = s;
98         path = new Path();
99     }
100
101 }
102

```

c) Display.java

```

2
3 import static com.example.oopprojectcolouringapp.PaintTools.paint_brush;
4 import static com.example.oopprojectcolouringapp.PaintTools.path;
5
6 import android.content.Context;
7 import android.graphics.Canvas;
8 import android.graphics.Color;
9 import android.graphics.Paint;
10 import android.graphics.Path;
11 import android.util.AttributeSet;
12 import android.view.MotionEvent;
13 import android.view.View;
14 import android.view.ViewGroup;
15
16 import androidx.annotation.Nullable;
17
18 import java.util.ArrayList;
19
20 public class Display extends View {
21
22     //Declare data attributes
23     private static ArrayList<Path> pathList = new ArrayList<>();
24     private static ArrayList<Integer> colorList = new ArrayList<>();
25     private static ArrayList<Float> sizeList = new ArrayList<>(); //////////
26     public ViewGroup.LayoutParams params;
27     public static int current_brushColor = Color.BLACK;
28     public static float current_brushSize = 10; ///////
29

```

```

29
30 // Operations
31 public Display(Context context) {
32     super(context);
33     init(context);
34 }
35
36 public Display(Context context, @Nullable AttributeSet attrs) {
37     super(context, attrs);
38     init(context);
39 }
40
41 public Display(Context context, @Nullable AttributeSet attrs, int defStyleAttr) {
42     super(context, attrs, defStyleAttr);
43     init(context);
44 }
45
46 public static ArrayList<Path> getPathList() { return pathList; }
47
48
49 public static ArrayList<Integer> getColorList() { return colorList; }
50
51
52
53 public static ArrayList<Float> getSizeList() { return sizeList; }
54
55
56
57 private void init(Context context){
58     paint_brush.setAntiAlias(true);
59     paint_brush.setColor(Color.BLACK);
60     paint_brush.setStyle(Paint.Style.STROKE);
61     paint_brush.setStrokeCap(Paint.Cap.ROUND);
62     paint_brush.setStrokeJoin(Paint.Join.ROUND);
63

```

```

64     paint_brush.setStrokeWidth(10f);
65
66     params = new ViewGroup.LayoutParams(ViewGroup.LayoutParams.MATCH_PARENT, ViewGroup.LayoutParams.WRAP_CONTENT);
67 }
68
69 @Override
70 public boolean onTouchEvent(MotionEvent event) {
71     float x = event.getX();
72     float y = event.getY();
73     switch (event.getAction()){
74         case MotionEvent.ACTION_DOWN:
75             path.moveTo(x,y);
76             invalidate();
77             return true;
78         case MotionEvent.ACTION_MOVE:
79             path.lineTo(x,y);
80             pathList.add(path);
81             colorList.add(current_brushColor);
82             sizeList.add(current_brushSize); ///////
83             invalidate();
84             return true;
85         default:
86             return false;
87     }
88 }
89

```



```

90         @Override
91         protected void onDraw(Canvas canvas) {
92             for (int i = 0; i < pathList.size(); i++){
93                 paint_brush.setColor(colorList.get(i));
94                 paint_brush.setStrokeWidth(sizeList.get(i)); //////////////
95                 canvas.drawPath(pathList.get(i), paint_brush);
96                 invalidate();
97             }
98         }
99     }
100 }

```

d) Images.java

```

2
3 import android.widget.ImageView;
4
5 public class Images extends PaintSettings{
6     // In progress // Have not compiled //
7
8     //Data attributes
9     private static int imagesID[];
10    private static ImageView images[];
11
12    //Operations
13    public static int[] getImageID(){
14
15    }
16
17    public static ImageView[] getImage(){
18
19    }
20 }

```