

PROG6112 test templates

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Turn document to autosave

Have ready:

- Word;
- Netbeans; and
- GitHub.

Learning units 1-3

PROG6112_test_prep

/* Fetched code from W3 schools for importing scanner class

https://www.w3schools.com/java/java_user_input.asp */

```
import java.util.Scanner;
```

```
public class PROG6112_test_prep {
```

```
    public static void main(String[] args) {
```

```
        // sort(arr);
```

```
        // info hiding = att + meth
```

```
        // 800*1000
```

```
        /*
```

```
        arrays are faster, simpler and can store primitives
```

```
        arraylists are malleable
```

```
        */ /*
```

```
        - static = no objects
```

```
        - abstract = allows empty meth
```

- NOT for attributes
- all abstract methods must be defined in child
- final = constant att + meth
- OR no subclasses
-
- static final = no objects AND constant
-
- abstrac & final = OPPOSITES
- */

// METHODS NEITHER PROMPT INPUT, NOT PRINT OUTPUT !!!!!!!!!!!!!!!

}

void Enum() { // create new datatype

enum directions {north, south, east, west}

System.out.println(directions.north);

directions.south.ordinal(); // 1

directions.south.name(); // "south"

directions[] x = directions.values(); // array of enum constants

directions.valueOf("west"); // directions.west

}

//=====

//=====

```
//=====
```

```
void loops(String[][] Serieses, int totSerieses, int totLength) {  
    for (String[] rec : Serieses){ // loop through list of serieses  
        totSerieses += 1; // increment number of serieses  
        totLength += rec.length;  
    }
```

```
    boolean found = false;
```

```
    String[] ans;
```

```
    while (!found) {
```

```
        for (String[] rec : Serieses) {
```

```
            if (rec[0].equals("hi")) {
```

```
                ans = rec;
```

```
                found = true;
```

```
            }
```

```
        }
```

```
    }
```

```
    if (!found) System.out.println("record was not found");
```

```
    /* Fetched code from W3 schools for creating an index-based for loop
```

```
    https://www.w3schools.com/java/java\_arrays\_loop.asp */
```

```
    for (int i = 0; i < Serieses.length; i++){ // loop through Serieses index
```

```
        //
```

```
    }
```

```

}

void string_int_switching() {

    int x = Integer.parseInt("1"); // convert string to integer


    /* Fetched code from Geeks for Geeks for converting an integer value to a String
    https://www.geeksforgeeks.org/java/different-ways-for-integer-to-string-
    conversions-in-java/ */

    String y = Integer.toString(x); // convert integer to String
}

void ErrorHandeling() {

    /* Fetched code from W3 schools for using try-catch-finally block
    https://www.w3schools.com/java/java_try_catch.asp */

    try { // attempt execution of fragile code

        //

    } catch (Exception e) { // catch exception if try block fails

        e.printStackTrace();

    } finally { // always continue script, using the following

        System.out.print("executed");

    }

}

void userInput (boolean valid, String ans) {

    while (!valid) {

        /* Fetched code from W3 schools for creating new scanner object
        https://www.w3schools.com/java/java_user_input.asp */

        Scanner Scan = new Scanner(System.in); // declare and initialise new Scanner
object

```

```

/* Fetched code from W3 schools for reading user input
https://www.w3schools.com/java/java\_user\_input.asp */

System.out.println("please enter your answer: "); // prompt user's input
ans = Scan.nextLine(); // read user input, using Scanner object

/* Fetched code from W3 schools for trimming whitespace
https://www.w3schools.com/java/ref\_string\_trim.asp */

ans = ans.trim(); // trim whitespace from user's answer

valid = ans.equals("");
}
}
void Switch(int x) {
/* Fetched code from W3 schools for implementing switch block
https://www.w3schools.com/java/java\_switch.asp */

switch (x) { // switch to read answer, and execute the correct code
    case 1 : // if answer is 1
        break;
    case 2 : // if answer is 2
        break;
    case 3 : // if answer is 3
        break;
    case 4 : // if answer is 4
        break;
}
}

```

```

        case 5 : // if answer is 5

            break;

        default : // if answer is invalid

            System.out.println("Invalid anser. Please try again.");

    }

}

void Print_F () {

    /* Fetched code from W3 schools for implementing System.out.printf()
    https://www.w3schools.com/java/ref_output_printf.asp */

    System.out.printf("SeriesID: %-15.2f;", 60.0); // display details

}

//=====

//=====

//=====

void arrays(int[] arr, int[] arr2) {

    Arrays.sort(arr);

    String a = Arrays.toString(arr); // [ , , ]

    Arrays.fill(arr, 1); // (array, newValue)

    boolean x = Arrays.equals(arr, arr2); // (array1, array2)

    int y = arr.length;

}

```

```

void arrayList(ArrayList<Integer> arl) {
    arl.add(22);
    int y = arl.get(0);
    arl.remove(0);

    /* Fetched code from W3 schools for updating an ArrayList element
    https://www.w3schools.com/java/java_arraylist.asp */

    arl.set(1, 100); // (index, newValue)

    /* Fetched code from Geeks for Geeks for reading the length of an ArrayList
    https://www.geeksforgeeks.org/java/java-program-to-find-the-length-size-of-an-
    arraylist/ */

    int length = arl.size();

    String a = arl.toString(); // [ , , ]
    arl.clear();

    /* Fetched code from Geeks for Geeks for validating if an arraylist is empty
    https://www.geeksforgeeks.org/java/arraylist-isempty-java-example/ */

    arl.isEmpty();
}

//=====
//=====
//=====

```



```

private static void bubbleSort() { //boolean sorted = false;

    /*
    bubblesort
    - swap pairs
    - cycle to right
    - the highest/lowest number will naturally be carried to the right
    - repeat cycle
      - slightly shorter
    -
    - if no swaps done IT IS SORTED
    */

    int[] arr = {1, 0, 4, 6, 8, 5, 3, 9};

    /* Fetched code from W3 schools for creating an index-based for loop
    https://www.w3schools.com/java/java_arrays_loop.asp */

    for (int i = 0; i < arr.length - 1 ; i++) { // for every element
        boolean sorted = false;
        for (int j = 0; j < arr.length - 1 - i ; j++) { // cycle through the list
            if (arr[j] > arr[j+1]) { // if the pair is in descending order
                // swap positions
                int temp = arr[j];
                arr[j] = arr[j+1];
                arr[j+1] = temp;
                sorted = true;
            }
        }
    }
}

```

```

    }
    if (!sorted) break;
}

for (int i : arr) System.out.println(i);
}

static void insertionSort() { // insertion sort practice
    /*
    insertion sort
    - cycle to right
    - when pattern-breaking element found
    - save
    - cycle left
      - save elements in previous positions

    insertion sort explanation:
    - save element
    - pull elements across until position found
    -
    - start with second element
    - compare it with elements before
    - insert it to the correct position
    - repeat for all elements

    for loop + if statement = while ( && ) biconditional loop
    - add in j++ or j--
    */

```

```

int[] arr2 = {1, 0, 4, 6, 8, 5, 3, 9};

/* Fetched code from W3 schools for creating an index-based for loop
https://www.w3schools.com/java/java\_arrays\_loop.asp */

for (int i = 1; i < arr2.length - 1; i++) { // cycle right - for each element
    int temp = arr2[i]; // save element
    int j = i - 1; // start at element behind i

    while (j >= 0 && arr2[j] > temp) { // while still in array && out of order( + NOT same
        element as i)
        arr2[j + 1] = arr2[j]; // shift forward -> j+1 = i
        j--; // ends at j = -1
    }

    // add 1 to j=-1 to indicate last element left off
    arr2[j + 1] = temp;
}

for (int i : arr2) System.out.println(i);
}
}

```

Parent

```
public class parent {  
    protected final int CATEGORY = 60;  
    protected int id;  
  
    protected parent (int id) {  
        this.id = id;  
        System.out.print(this.id);  
    }  
  
    protected void speak() {  
        System.out.println("i am an adult");  
    }  
    protected void walk() {  
        System.out.println("i am walking");  
    }  
}  
  
class child extends parent { // no info hiding  
    private final int SUB_CATEGORY = 60;  
    private String toy;  
  
    private child (int x, String toy) {  
        super(x);  
        this.toy = toy;  
        System.out.print(super.id);  
    }  
}
```

```
protected void cry() {  
    System.out.println("i am sad");  
}
```

```
/* Fetched code from Geeks for Geeks for overriding inherited methods  
https://www.geeksforgeeks.org/java/overriding-in-java/ */
```

@ Override

```
protected void speak() {  
    super.speak();  
    System.out.println("i am a child");  
}  
}
```

abstractClass

```
public abstract class abstractClass {  
    int childId;  
  
    abstractClass (int id) { // for super () child classes  
        this.childId = id;  
    }  
  
    protected void standardAct() {  
        System.out.println("this is the non-abstract method");  
    }  
    protected abstract void childAct();  
}
```

RandomGenerators

```
// method to generate unique 5-digit string

private static String createId(ArrayList<String[]> Serieses) {

    String idCode = ""; // declare idCode, for conversion if Id Integer to id String

    String id = ""; // declare ID as a String

    int Id = 0; // declare Integer to increment the ID

    /*

    Fetched code from Geeks for Geeks for reading the length of an ArrayList

    https://www.geeksforgeeks.org/java/java-program-to-find-the-length-size-of-an-arraylist/

    */

    // determines if array is too long

    if (Serieses.size() > 100000) System.out.println("Maximim arraylist length exceeded");

    /* Fetched code from Geeks for Geeks for validating if an arraylist is empty

    https://www.geeksforgeeks.org/java/arraylist-isempty-java-example/ */

    // initialises ID to starting value (00000) if arraylist is empty

    else if (Serieses.isEmpty()) id = "00000";

    // normal ID generation function

    else {

        id = "00000"; // initialise id String

        for (String[] series : Serieses) { // loop through Serieses

            if (series[0].equals(id)) { // the id numbers match - the current id number is already taken
```

```

        Id += 1; // increment by 1

        /* Fetched code from Geeks for Geeks for converting an integer value to a
String
        https://www.geeksforgeeks.org/java/different-ways-for-integer-to-string-
conversions-in-java/ */

        idCode = Integer.toString(Id); // convert ID integer to String

        // add 0s to ID, so there are exactly 5 characters in the ID
        int filler = 5 - idCode.length(); // calculate number of missing characters in
idCode
        id = "0".repeat(filler) + idCode; // concatenate idCode with missing 0s, and set
id String
    } else { // ID doesnt match - current id number does not exist
        break; // stop looping - unique id number has been found
    }
}
}

return id; // return final, unique ID number
}

```


InterfaceClass

```
interface inter1 { // all are public static - DEFAULT
```

```
    final int id = 60;
```

```
    void meth1();
```

```
}
```

```
interface inter2 {
```

```
    void meth2();
```

```
}
```

```
public class InterfaceClass implements inter1, inter2 {
```

```
    // implement all OR be declared abstract
```

```
    @ Override
```

```
    public void meth1() { // must be public
```

```
        System.out.println("this is from interface 1");
```

```
    }
```

```
    @ Override
```

```
    public void meth2() { // must be public
```

```
        System.out.println("this is from interface 2");
```

```
    }
```

```
}
```

Template

PROG6112_test_template

```
package prog6112_test_template;

/* Fetched code from W3 schools for importing scanner class
https://www.w3schools.com/java/java\_user\_input.asp */

import java.util.Scanner;

public class PROG6112_test_template {

    public static void main(String[] args) {
        //

        String ans = "1";
        boolean exit = false;
        while (!exit) { // repeat code until application is terminated
            //

            exit = !ans.equals("1");
        }
    }

    /* Fetched code from W3 schools for implementing modifiers
    https://www.w3schools.com/java/java\_modifiers.asp */
}
```

```
private static int meth() {  
    return 1;  
}  
}
```

```
//=====
```

```
// END-OF-FILE
```

```
//=====
```

SubClass

```
package prog6112_test_template;

class SubClass {

    /* Fetched code from W3 schools for implementing modifiers
    https://www.w3schools.com/java/java_modifiers.asp */

    // attributes

    protected String SeriesId;

    /* Fetched code from Geeks for Geeks for implementing constructors
    https://www.geeksforgeeks.org/java/constructors-in-java/

    Fetched code from W3 schools for implementing modifiers
    https://www.w3schools.com/java/java_modifiers.asp */

    // main constructor

    protected SubClass (String SeriesId) {
        this.SeriesId = SeriesId;
    }

    /* Fetched code from W3 schools for implementing modifiers
    https://www.w3schools.com/java/java_modifiers.asp */

    protected static int meth() {
        return 1;
    }
}
```

```
}
```

/* Fetched code from W3 schools for implementing modifiers

https://www.w3schools.com/java/java_modifiers.asp

Fetched code from W3 schools for creating a subclass

https://www.w3schools.com/java/java_inheritance.asp */

```
class SubSub extends SubClass {
```

```
    /* Fetched code from Geeks for Geeks for implementing constructors in subclasses
```

```
    https://www.geeksforgeeks.org/java/inheritance-and-constructors-in-java/ */
```

```
    // main constructor
```

```
    protected SubSub(String SeriesId) {
```

```
        super(SeriesId);
```

```
    }
```

```
}
```

```
//=====
```

```
==
```

```
// END-OF-FILE
```

```
//=====
```

```
==
```

SubClassTest

```
package prog6112_test_template;

/* Fetched code from Apache NetBeans for creating JUnit tests
https://netbeans.apache.org/tutorial/main/kb/docs/java/junit-intro/#\_writing\_junit\_4\_tests */

import org.junit.Test;
import static org.junit.Assert.*;

public class SubClassTest {
    @Test
    public void methTest() {
        System.out.println("SubClassTest : methTest()");

        int expected = 1;
        int actual = SubClass.meth();

        assertEquals(expected, actual);
    }
}

//=====
==

// END-OF-FILE

//=====
==
```