

Mid-Sem Exam, Sept. 2021

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Year - 3rd

Stream - CSE

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Enrollment No. - 12019009001418

Paper Name - IT Workshop

Paper Code - PCC-CSS02

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Date - 06/09/2021

1) i) Neither of 0.1, 0.2 and 0.3 can be represented accurately in binary. The round off errors from 0.1 and 0.2 accumulate and hence there is a difference of $5.5511e-17$ between $(0.1+0.2)$ and 0.3 .

ii) In charts that use MATLAB as the action language, you can use a single action to specify all of the elements of a vector or matrix. For example, this action assigns each element of the 2-by-3 matrix A to a different value:

$$A = [1 \ 2 \ 3; 4 \ 5 \ 6];$$

iii) The Command Window enables you to enter individual statements at the command line and view the generated results. MATLAB immediately adds variable a to the workspace and displays the result in the Command Window. When you do not specify an output variable, MATLAB uses the variable ans , short for answer, to store the results of your calculation.

v) A class is a user-defined type that describes what a certain type of object will look like. A class description consists of a declaration and a definition. Usually these pieces are split into separate files. An object is a single instance of a class. You can create many objects from the same class type.

iv) Oculus Rift - Oculus Rift is a virtual reality headset that is designed to connect to a high powered PC to enable advanced computation and graphics rendering.

vi) 7 will be the answer, when $3 \wedge 4$ is evaluated in Python, ' \wedge ' is the bitwise XOR operator. Therefore, 3 will be represented as 011 in bits while 4 will be represented as 100, on performing ' \wedge ' operator the result will be 111 i.e. 7.

vii) An Android Virtual Device (AVD) is an emulator configuration that allows developers to test the application by simulating the real device capabilities. We can configure the AVD by specifying the hardware and software. We can configure the AVD by specifying the hardware & software options. AVD manager enables an easy way of creating and managing the AVD with its graphical interface.

viii) Yes, The Scale tool lets you rescale the Game object evenly on all axes at once by clicking & dragging on the cube at the centre of the Gizmo. You can also scale the axes individually, but you should take care if you do this when there are child Game-objects, because the effect can look quite strange.

ix) $\text{Comp}(3, 1)$ results to 1

if $x > y$,
if $x = y$, then results 0
if $x < y$, then -1

1) A workspace is grouping of source ~~code~~ code files that make up a larger unit, like a webpage, website, or software program. The workspace is usually a file or directory.
→ `disp('welcome')`.

2. Key features of Python -

- i) Python is uninterpreted, interactive, directly executed with pre combined code.
- ii) It is a free open source and portable language having a large repository of libraries.
- iii) Python is used for both scientific and non-scientific programming.

A list is a collection of values or an ordered sequence of values (items, elements of lists are enclosed in `[]` brackets, separated by commas). List element can be accessed by indexing or slicing. It is mutable.

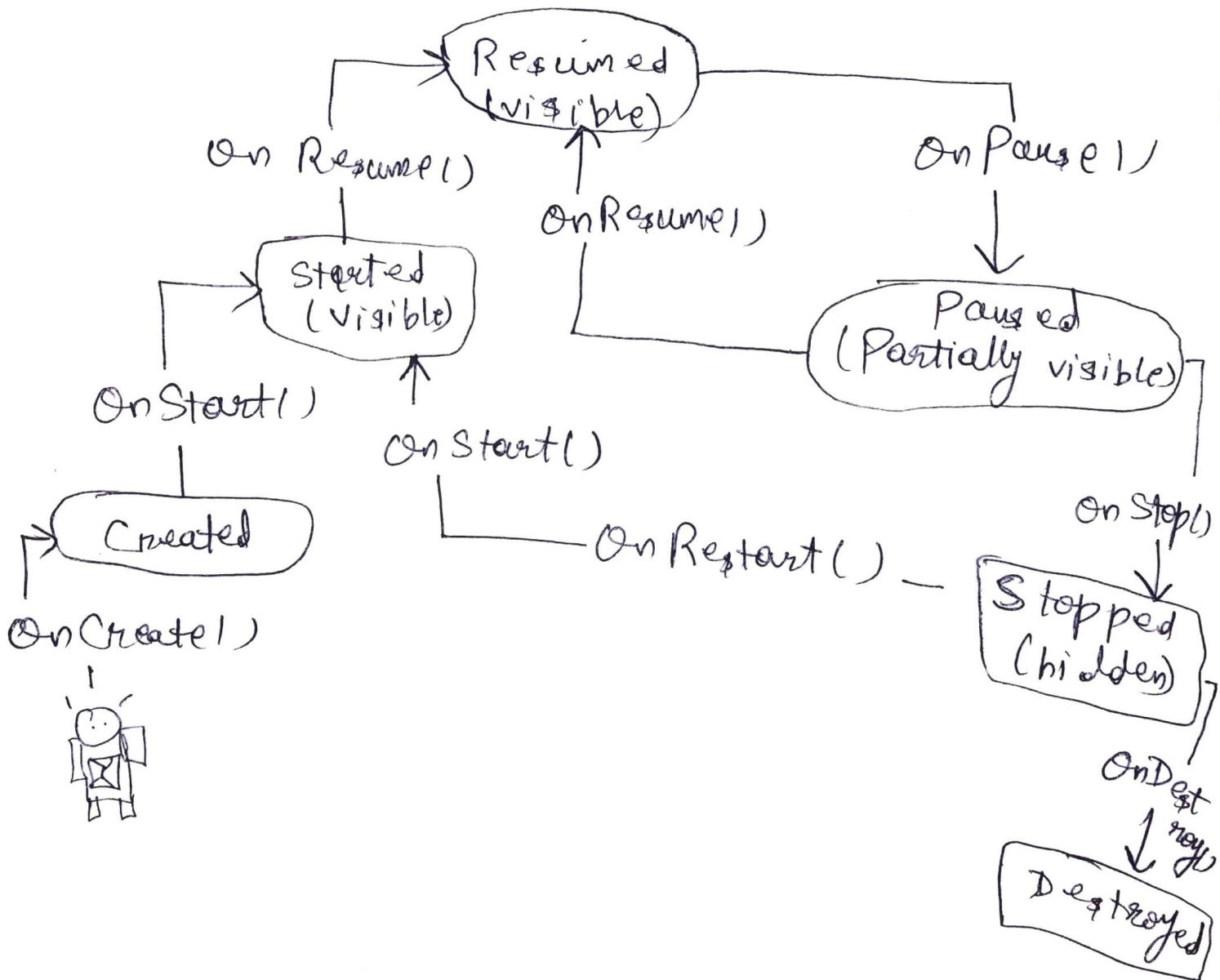
```
4) num = int(input("Enter a number: "))  
    if num > 1:  
        for i in range(2, num):  
            if (num % i) == 0:  
                print(num, "is not a prime number")  
                print(i, "times", num // i, "is", num)  
                break  
            else:  
                print(num, "is a prime number")  
            else:  
                print(num, "is not a prime number")
```


5. B) Android Applications can be sold out through Google play, Amazon App Store, Opera Mobile Store etc.

Top Categories Android Apps. in market are-

- i) Business
- ii) Music
- iii) Travel
- iv) Sports

Android App Life Cycle -



6.13) The Android Components are -

-) Activities
-) Services
-) Broadcast Receivers
-) Content Provider

Broadcast Receivers used to respond to msg. from other applications or from the system.

Syntax :-

```
Public Class My Receiver extend Broad-  
CastReceiver  
{  
    public void onReceive(Context, Intent){  
    }  
}
```

8) 1) Arithmetic Operators -

Used to perform mathematical operations like addition, subtraction, multiplication, etc.

Eg - $x = 15, y = 4$

`Print ("x+y =", x+y)`

output - $x+y = 19$

2) Comparison operators -

Used to compare values. It returns either True or false according to the condition.

Eg - $x = 10, y = 12$

`Print ("x > y is", x > y)`

output - $x > y$ is false

3) Logical operators -

Logical operators are the and, or, not operators.

- and \rightarrow True if both the operands are True
- or \rightarrow True if either of the operands is true
- not \rightarrow True if operand is false.

Eg - $x = \text{True}, y = \text{False}$

`Print ("x and y is", x and y)`

output
 x and y is False

4) Bitwise operators -

Bitwise operators act on operands as if they were strings of binary digits. They operate bit by bit, hence the name.

example - 2 is 10 in binary and 1 is 111.

5) Assignment operators -

They are used in Python to assign values to variables.

$a = 5$ is a simple assignment operator that assigns the value 5 on the right to the variable a on the left.

There are various compound operators in Python like $a += 5$ that adds to the variable and later assigns the same. It is equivalent to $a = a + 5$.

10) DVM (Dalvik Virtual Machine)

- 1) It is register based which is designed to run on low memory.
- 2) DVM uses its own byte code and runs the "Dex" File From Android has got a just in Time Compiler.
- 3) DVM support is the Android operating system only.

JVM (Java Virtual Machine)

- 1) It is stack based.
- 2) JVM uses Java byte code and runs "class" file having JIT (just in Time).
- 3) JVM support is multiple OS.

4) For DVM very few Re-tools are available.

5) Here the executable is APK.

4) For JVM many Re-tools are available.

5) Here the executable is JAR.

Android Emulator -

It stimulates Android devices on your computer so that you can test your application on a variety of devices and Android API levels without needing to have each physical device. The emulator provides almost all of the capabilities of a real Android device.

↳ Set Content View (R.layout.activity_main): This is a Java method called setContentView. It sets the XML File you want as your main layout when the app starts. In b/w. round brackets, you need the name and location of your layout file. The letter R in the round brackets is short. For res. The layout activity-main part points to the activity-main XML File, which is in the layout Folder of res.

11) Keywords - They are the reserved words in Python. we cannot use a keyword as a variable name, Function name or any other identifiers.

Variable - Every value in Python has a datatype. Since everything is an object in Python programming.

data types are actually classes and variables are instance (object) of these classes.
Eg - Class, continue, del, and, as, for

Statements is an instruction that the Python interpreter can execute.

eg -

```
print 1  
x = 2  
print x
```

Expressions - are representation of values. They are different from statements in the fact that statements do something while expressions are representation of value.

Eg - add (+), subtract (-) etc.

~~variable~~ A Python variable is a reserved

Identifier - is a user defined name to represent the basic building blocks of Python. It can be a function, class, module or any other object.

Eg -

```
u = class A { }
```


9) log log function plot x & y co-ordinates using a base 10 logarithmic scale on the x -axis and the y -axis

pos domain \rightarrow

```
x = logspace(-10, 17);
```

```
y = 3 ^ x;
```

```
title('Plotting log x & log y')
grid on;
```

neg domain \rightarrow $x = \logspace(-10, 17);$

```
y = 3 ^ x
```

```
title('Plotting log x & log y');
grid on;
```

3) % Area and Circumference of a Circle

```
radius = input('Enter the radius: ');
area = pi * radius ^ 2;
circ = 2 * pi * radius;
disp('----- CIRCLE -----')
printf('Area of Circle: %f\n', area);
printf('Circumference of Circle: %f\n', circ);
```

% Volume & Surface Area of Sphere

```
vol = (4/3) * pi * radius ^ 3;
surf = 4 * pi * radius ^ 2;
disp('----- SPHERE -----')
printf('Volume of sphere: %f\n', vol);
printf('Surface Area of sphere: %f\n', surf);
```

The bar3n function is used to plot 3-D horizontal bar graph.

12. A) In a marker-based AR application the images (or the corresponding image descriptors) to be recognized are provided beforehand. In this case you know exactly what the application will search for while acquiring camera data (camera frames). Most of the nowadays AR apps dealing with image recognition are marker-based. This is because, it's much more simple to detect things that are hard-coded in your app.

On the other hand, a marker-less AR application recognizes things that were not directly provided to the application beforehand. This scenario is much more difficult to implement because the recognition algorithm running in your AR application has to identify patterns, colors or some other features that may exist in camera frames. For