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SECOND MID TERM TEST, NOVEMBER - 2019 STANDARD - XII

Time : 1.30 hrs

COMPUTER SCIENCE

Marks: 50

10×1=10

I. Answer the following to all questions:-

- 1) The expansion of CRLF is
 - a) Control Return and Line Feed
 - b) Carriage Return and Form
 - c) Control Router and Line Feed
 - d) Carriage Return and Line Feed
- 2) Default delimiter of CSV file
 - a) ' ' b) " "
 - c) 1 d) '\n'
- 3) Which command is used to skip when read a row in a File.
 - a) next () b) skip ()
 - c) omit () d) bounce ()
- 4) By default "Skipinitialspace" has a value
 - a) False b) equal
 - c) notequal d) True
- 5) Write the output of the following program?
if Sample 1. CSU has the following information.
Student name, std, nativeplace,
Sri, 12, Bangalore.
import CSV
F = Open ('D:\pyprg\Sample.\ CSV', 'r')
reader = CSV reader (F)
next (reader)
for row in reader
print (row)
 - a) Student name, std, nativeplace
 - b) Student name, Std, nativeplace, Sri, 12, Bangalore
 - c) Sri, 12, Bangalore
 - d) Sri, 12, Bangalore. Student name, std, nativeplace
- 6) Importing C++ program in a python program is called
 - a) wrapping b) Downloading
 - c) Interconnecting d) parsing
- 7) Which of the following is programing language?
 - a) PHP b) ASP
 - c) VB Script d) C++
- 8) Which of the following language contains Garbage collection facility?
 - a) FORTRAN b) COBOL
 - c) Python d) C++
- 9) The module which allows you to interface with the windows operating system is
 - a) OS Module b) Sys Module
 - c) CSV Module d) getopt Module
- 10) Return values of getoptc()
 - a) <main>, <args> b) <opts>, <sys>
 - c) <sys>, <opts> d) <opts>, <args>

II. Write any five of the following questions.

(Question number 17 compulsory question)

5×2=10

11) What is CSV file? Give Expansion.

12) Write the functionalities of writerow () and writerows() procedure.

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- 13) How will you sort more than one column from a CSV file
- 14) Write Python file modes any 4 with explanation.
- 15) Give expansion (i) SWIG (ii) API
- 16) What is modules?
- 17) Write the syntax of getopt () function.

III. Write any five of the following questions.

(Question number 24 compulsory question)

5×3=15

- 18) Differentiate PYTHON and C++.
- 19) Write a python program to read a CSV file with default delimiter comma (^).
- 20) What are the applications of Scripting language?
- 21) Write the Python interfaces for wrapping C++ Programs.
- 22) What are all the two methods to read CSV file using python? with example.
- 23) Write any three rules to be followed to format the data in a CSV file.
- 24) Write the output of sample 2. CSV File

```
import CSV
```

```
Data = [['Book', 'Qnantity'], ['C++', '10'], ['Java', 15], ['Python', 20]
```

```
CSV register dialect ('myDialect', delimiter=',', linterminator='\n')
```

```
F=Open ('D:\\pyprg\\sample2.CSV', 'w')
```

```
Writer =CSV. Writer (F, dialect= 'myDialect')
```

```
Writer.Writerows (Data)
```

```
F.Close ( )
```

IV. Answer the following:-

3×5=15

- 25) Differentiate Excel file and CSV file. [or]
Explain about write mode and append mode with examples.
- 26) Write the features of python over C++ [or]
What is the purpose of Sys, Os, getopt module in python. Explain.
- 27) Write a python program using Dict writer () class, to write the 'student.CSV' file with the following information:

S.No Name City

1. Kannan, Madurai

2. Many, Dgl

3. Vennila, Salem

4. Nusrin, Madurai

5. Kohila, Covai.

[or]

Write a python program to execute the following C++ coding

```
# include <iostream>
```

```
using namespace std,
```

```
int main ( )
```

```
{ Cout <<"COMPUTER";
```

```
return (0);
```

```
}
```

The above C++ program is saved in a file computer. CPP.



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SECOND MID TERM TEST-2019

STD: XII

7.11.2019






SUBJECT: **Computer Science**

TENTATIVE ANSWER KEY

MARKS: 50

SECTION-I		MAR KS
Q.NO		
1	d)carriage return and line feed	1
2	Option wrong :ans(,)	1
3	a)next()	1
4	a>false	1
5	c)sri,12,banglore	1
6	a)Wrapping	1
7	d)c++	1
8	c)python	1
9	a)os module	1
10	d)<opts>,<args>	
Q.NO	SECTION-II	MAR KS
11	(i)A CSV file is a human readable text file where each line has a number of fields, separated by commas or some other delimiter. (ii)Common separated value.	2
12	The write row() method writes one row at a time. Write rows() method is used to write all the data at once	2

13	<p>To sort by more than one column you can use itemgetter with multiple indices: operator.itemgetter (1,2)</p> <p>syntax:</p> <p>sortedlist=sorted(data, key=operator.itemgetter(Col_number), reverse=True)</p>		2
14	Mode	Description	2
	'r'	Open a file for reading. (default)	
	'w'	Open a file for writing. Creates a new file if it does not exist or truncates the file if it exists.	
	'x'	Open a file for exclusive creation. If the file already exists, the operation fails.	
	'a'	Open for appending at the end of the file without truncating it. Creates a new file if it does not exist.	
15	(i)SWIG (Simplified Wrapper Interface Generator. (ii) API-Application Programming Interface .		2
16	❖ Modular programming is a software design technique to split your code into separate parts. These parts are called modules.		2
17	<opts>,<args>=getopt.getopt(argv, options, [long_options])		2
18	Part-III		3
	PYTHON	C++	
	Python is typically an "interpreted" language	C++ is typically a "compiled" language	
	Python is a dynamic-typed language	C++ is compiled statically typed language	
	Data type is not required while declaring variable	Data type is required while declaring variable	
It can act both as scripting and general purpose language.	It is a general purpose language		

19	<pre>import csv open('c:\\pyprg\\sample1.csv', 'r') as F: reader = csv.reader(F) print(row) F.close()</pre>	3
20	<ul style="list-style-type: none"> ❖ To automate certain tasks in a program ❖ Extracting information from a data set ❖ Less code intensive as compared to traditional programming language ❖ can bring new functions to applications and glue complex systems together. 	3
21.	<ul style="list-style-type: none"> ❖ Python-C-API (API-Application Programming Interface for interfacing with C programs) ❖ Ctypes (for interfacing with c programs) ❖ SWIG (Simplified Wrapper Interface Generator- Both C and C++) ❖ Cython (Cython is both a Python-like language for writing C-extensions) ❖ Boost. Python (a framework for interfacing Python and C++) ❖ MinGW (<i>Minimalist GNU for Windows</i>) 	3
22	<p>Read a CSV File Using Python: There are two ways to read a CSV file.</p> <ol style="list-style-type: none"> 1. Use the csv module's reader function . Ex: reader = csv.reader(F) 2. Use the DictReader class. Ex: input_file =csv.DictReader(open(filename,'r')) 	3
23	<ul style="list-style-type: none"> ❖ Each record (row of data) is to be located on a separate line, delimited by a line break by pressing enter key. For example:  xxx,yyy   denotes enter Key to be pressed ❖ The last record in the file may or may not have an ending line break. For example:  ppp, qqq  yyy, xxx ❖ There may be an optional header line appearing as the first line of the file with the same format as normal record lines. The header will contain names corresponding to the fields in the file and should contain the same number of fields as the records in the rest of the file. 	3

	<p>For example: field_name1,field_name2,field_name3 aaa,bbb,ccc zzz,yyy,xxx CRLF(<u>C</u>arriage <u>R</u>eturn and <u>L</u>ine <u>F</u>eed)</p> <ul style="list-style-type: none"> ❖ Within the header and each record, there may be one or more fields, separated by commas. Spaces are considered part of a field and should not be ignored. The last field in the record must not be followed by a comma. For example: Red , Blue ❖ Each field may or may not be enclosed in double quotes. If fields are not enclosed with double quotes, then double quotes may not appear inside the fields. <p>For example: "Red","Blue","Green" #Field data with double quotes Black,White,Yellow #Field data without double quotes</p> <ul style="list-style-type: none"> ❖ Fields containing line breaks (CRLF), double quotes, and commas should be enclosed in double-quotes. <p>For example: Red, ",", Blue CRLF # comma itself is a field value.so it is enclosed with double quotes Red, Blue , Green</p> <ul style="list-style-type: none"> ❖ If double-quotes are used to enclose fields, then a double-quote appearing inside a field must be preceded with another double quote. <p>For example: "Red, " "Blue", "Green", # since double quotes is a field value it is enclosed with another double quotes ,White</p>									
24	<p>Output:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">BOOK</th> <th style="text-align: left;">Quantity</th> </tr> </thead> <tbody> <tr> <td>C++</td> <td>10</td> </tr> <tr> <td>Java</td> <td>15</td> </tr> <tr> <td>Python</td> <td>20</td> </tr> </tbody> </table>	BOOK	Quantity	C++	10	Java	15	Python	20	3
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	<p>Excel is a spreadsheet that saves files into its own proprietary format viz. xls or xlsx</p>	<p>CSV is a format for saving tabular information into a delimited text file with extension .csv</p>	
	<p>Excel consumes more memory while importing data</p>	<p>Importing CSV files can be much faster, and it also consumes less memory</p>	
25) or)	<p>Write mode:</p> <ul style="list-style-type: none"> ❖ The 'w' write mode creates a new file. If the file is already existing 'w' mode over writes it. ❖ Open a file for writing. Creates a new file if it does not exist or truncates the file if it exists. <p>Append mode:</p> <ul style="list-style-type: none"> ❖ 'a' append mode add the data at the end of the file if the file already exists otherwise creates a new one. ❖ Open for appending at the end of the file without truncating it. <p>Example:</p> <pre>import csv row = ['6', 'Sajini', 'Madurai'] with open('student.csv', 'a') as CF: # append mode to add data at the end writer = csv.writer(CF) writer.writerow(row) # writerow() method write a single row of data in CF.close()</pre>		5
26	<ul style="list-style-type: none"> ❖ Python uses Automatic Garbage Collection whereas C++ does not. ❖ C++ is a statically typed language, while Python is a dynamically typed language. ❖ Python runs through an interpreter, while C++ is pre-compiled. ❖ Python code tends to be 5 to 10 times shorter than that written in C++. ❖ In Python, there is no need to declare types explicitly where as it should be done in C++ ❖ In Python, a function may accept an argument of any type, and return multiple values without any kind of declaration beforehand. Whereas in C++ return statement can return only one value. 		5
26) or	<p>(i) Python's sys module:</p> <p>This module provides access to some variables used by the interpreter and to functions that interact strongly with the interpreter.</p> <p>sys.argv:</p>		

- ❖ `sys.argv` is the list of command-line arguments passed to the Python program. `argv` contains all the items that come along via the command-line input, it's basically an array holding the command-line arguments of the program.
- ❖ To use `sys.argv`, you will first have to import `sys`. The first argument, `sys.argv[0]`, is always the name of the program as it was invoked, and `sys.argv[1]` is the first argument you pass to the program (here it is the C++ file).

(ii) Python's OS Module:

The OS module in Python provides a way of using operating system dependent functionality. The functions that the OS module allows you to interface with the Windows operating system where Python is running on.

- ❖ **`os.system()`**: Execute the C++ compiling command (a string contains Unix, C command which also supports C++ command) in the shell (Here it is Command Window). For Example to compile C++ program `g++` compiler should be invoked. To do so the following command is used.

```
os.system ('g++' + <variable_name1> '-<mode>' +
<variable_name2>
```

(iii) Python getopt module:

The `getopt` module of Python helps you to parse (split) command-line options and arguments. This module provides two functions to enable command-line argument parsing.

getopt.getopt method:

This method parses command-line options and parameter list. Following is the syntax for this method –

```
<opts>,<args>=getopt.getopt(argv, options,
[long_options])
```

Write the syntax for `getopt()` and explain its arguments and return values

getopt.getopt method:

This method parses command-line options and parameter list. Following is the syntax:

```
<opts>,<args>=getopt.getopt(argv, options,
[long_options])
```

Here is the detail of the parameters –

- ❖ **`argv`** – This is the argument list of values to be parsed (splited). In our program the complete command will be passed as a list.
- ❖ **`options`** – This is string of option letters that the Python program recognize as, for input or for output, with options (like 'i' or 'o') that followed by a colon (:). Here colon is used to

denote the mode.

- ❖ **long_options** –This parameter is passed with a list of strings. Argument of Long options should be followed by an equal sign ('='). In our program the C++ file name will be passed as string and 'i' also will be passed along with to indicate it as the input file.

getopt() method returns value consisting of two elements.

Each of these values are stored separately in two different list (arrays) **opts** and **args**. Opts contains list of splitted strings like mode, path and args contains any string if at all not splitted because of wrong path or mode. args will be an empty array if there is no error in splitting strings by getopt().

- ❖ For example The Python code which is going to execute the **C++ file p4** in command line will have the getopt() method like the following one.

opts, args = getopt.getopt (argv, "i:", ['ifile='])

where contains	opts	[('-i', 'c:\\pyprg\\p4')]
-i :-		option nothing but mode should be followed by :
'c:\\pyprg\\p4'		value nothing but the absolute path of C++ file.

- ❖ In our examples since the entire command line commands are parsed and no leftover argument, the second argument args will be empty []. If args is displayed using print() command it displays the output as [].

27)

```
import csv
data = [{'S.No' : '1', 'Name': 'kannan', 'city': 'madurai'},
        [{'S.No' : '2', 'Name': 'many', 'city': 'Dgl'},
        [{'S.No' : '3', 'Name': 'vennila', 'city': 'salem'},
        [{'S.No' : '4', 'Name': 'Nusrin', 'city': 'madurai'},
        [{'S.No' : '5', 'Name': 'kohila', 'city': 'covai'},]
with open('c:\\pyprg\\ch13\\student.csv', 'w') as CF:
fields = ['S.No', 'Name', 'City']
w = csv.DictWriter(CF, fieldnames=fields)
w.writerheader()
w.writerows(data)
print("writing completed")
CF.close()
```

5

27)
OR

```
import sys, os, getopt
def main(argv):
    cpp_file = ""
    exe_file = ""
    opts, args = getopt.getopt(argv, "i:", ['ifile='])
    for o, a in opts:
        if o in ("-i", "--ifile"):
            cpp_file = a + '.cpp'
            exe_file = a + '.exe'
    run(cpp_file, exe_file)
def run(cpp_file, exe_file):
    print("Compiling " + cpp_file)
    os.system('g++ ' + cpp_file + ' -o ' + exe_file)
    print("Running " + exe_file)
    print("-----")
    print
    os.system(exe_file)
    print
    if __name__ == '__main__':
        main(sys.argv[1:])
```

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