CBSE Class 12 Computer Science 2015 - Set 91 (Set-4) Python

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 3 Hours **Maximum Marks: 70**

General Instructions

(i) This Python version contains 7 main questions: the Python programming option and the common section.

(ii) The official paper offers Section A (C++) or Section B (Python). This version includes Section B and the compulsory Section C.

(iii) Attempt all questions in the selected programming section and in Section C.

(iv) State the selected programming section on the first page of the answer-book.

(v) Follow any internal choices printed with individual questions.

Section B — Python

1(a). How is `___init()___` different from `___del()___` ?

1(b). Name the function/method required to

1. check if a string contains only alphabets
2. give the total length of the list

1(c). Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```
def Sum(Count) #Method to find sum
    S=0
    for I in Range(1,Count+1):
        S+=I
    RETURN S
print Sum[2]   #Function Call
print Sum[5]
```

1(d). Find and write the output of the following python code :

```
for Name in ['John',
'Garima','Seema','Karan']:
    print Name
    if Name[0]=='S':
        break
else:
    print 'Completed!'
print'Weldone!'
```

1(e). Find and write the output of the following python code :

```
class Emp:
  def ___init___(self,code,nm):
#constructor
     self.Code=code
     self.Name=nm
  def Manip(self):
     self.Code=self.Code+10
     self.Name='Karan'
  def Show(self,line):
     print self.Code,self.Name,line


s=Emp(25,'Mamta')
s.Show(1)
s.Manip()
s.Show(2)
print s.Code+len(s.Name)
```

1(f). What are the possible outcome(s) executed from the following code ? Also specify the maximum and minimum values that can be assigned to variable COUNT.

```
TEXT="CBSEONLINE"
COUNT=random.randint(0,3)
C=9
while TEXT[C]!='L':
     print TEXT[C]+TEXT[COUNT]+'*',
     COUNT=COUNT+1
     C=C-1
```

(A) EC*NB*IS* (B) NS*IE*LO*

(C) ES*NE*IO* (D) LE*NO*ON*

2(a). Illustrate the concept inheritance with the help of a python code.

2(b). What will be the output of the following python code ? Explain the try and except used in the code.

```
A=0
B=6
print 'One'
try:
     print 'Two'
     X=B/A
     Print 'Three'
except ZeroDivisionError:
     print B*2
     print 'Four'
except:
     print B*3
     print 'Five'
```

2(c). Write a class PHOTO in Python with following specifications :

```
Instance Attributes
- Pno        # Numeric value
- Category   # String Value
- Exhibit    # Exhibition Gallery with
String value
Methods:
- FixExhibit()  #A method to assign
                #Exhibition Gallery as per
Category
                #as shown in the following
table
```

Category	Exhibit
Antique	Zaveri
Modern	Johnsen
Classic	Terenida

```
- Register() #A function to allow user to
enter values
             #Pno, Category and call
FixExhibit() method
- ViewAll()  #A function to display all
the data members
```

2(d). What is operator overloading with methods ? Illustrate with the help of an example using a python code.

2(e). Write a method in python to display the elements of list twice, if it is a number and display the element terminated with '*' if it is not a number.

For example, if the content of list is as follows :

```
MyList=['RAMAN','21','YOGRAJ','3','TARA']
```

The output should be

```
RAMAN*
2121
YOGRAJ*
33
TARA*
```

3(a). What will be the status of the following list after fourth pass of bubble sort and fourth pass of selection sort used for arranging the following elements in descending order ?

34, -6, 12, -3, 45, 25

3(b). Write a method in python to search for a value in a given list (assuming that the elements in list are in ascending order) with the help of Binary Search method. The method should return -1, if the value not present else it should return position of the value present in the list.

3(c). Write PUSH(Names) and POP(Names) methods in python to add Names and Remove names considering them to act as Push and Pop operations of Stack.

3(d). Write a method in python to find and display the composite numbers between 2 to N. Pass N as argument to the method.

3(e). Evaluate the following postfix notation of expression. Show status of stack after every operation.

```
34,23,+,4,5,*,-
```

4(a). Differentiate between the following :

1. `f = open('diary.txt', 'a')`
2. `f = open('diary.txt', 'w')`

4(b). Write a method in python to read the content from a text file story.txt line by line and display the same on screen.

4(c). Consider the following definition of class Student. Write a method in python to write the content in a pickled file student.dat.

```
class Student:
  def ___init___(self,A,N):
     self.Admno=A
     self.Name=N
  def Show(self):
     print(self.Admno,"#",self.Name)
```

Section C — Common Questions

5(a). Observe the following table carefully and write the names of the most appropriate columns, which can be considered as (i) candidate keys and (ii) primary key:

Code	Item	Qty	Price	Transaction Date
1001	Plastic Folder 14"	100	3400	2014-12-14
1004	Pen Stand Standard	200	4500	2015-01-31
1005	Stapler Mini	250	1200	2015-02-28
1009	Punching Machine Small	200	1400	2015-03-12
1003	Stapler Big	100	1500	2015-02-02

5(b). Consider the following DEPT and EMPLOYEE tables. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii):

Table: DEPT

DCODE	DEPARTMENT	LOCATION
D01	INFRASTRUCTURE	DELHI
D02	MARKETING	DELHI
D03	MEDIA	MUMBAI
D05	FINANCE	KOLKATA
D04	HUMAN RESOURCE	MUMBAI

Table: EMPLOYEE

5(b). (continued)

ENO	NAME	DOJ	DOB	GENDER	DCODE
1001	George K	2013-09-02	1991-09-01	MALE	D01
1002	Ryma Sen	2012-12-11	1990-12-15	FEMALE	D03
1003	Mohitesh	2013-02-03	1987-09-04	MALE	D05
1007	Anil Jha	2014-01-17	1984-10-19	MALE	D04
1004	Manila Sahai	2012-12-09	1986-11-14	FEMALE	D01
1005	R SAHAY	2013-11-18	1987-03-31	MALE	D02
1006	Jaya Priya	2014-06-09	1985-06-23	FEMALE	D05

Note: DOJ refers to date of joining and DOB refers to date of Birth of employees.

(i) To display Eno, Name, Gender from the table EMPLOYEE in ascending order of Eno.

(ii) To display the Name of all the MALE employees from the table EMPLOYEE.

5(b). (continued)

(iii) To display the Eno and Name of those employees from the table EMPLOYEE who are born between '1987-01-01' and '1991-12-01'.

(iv) To count and display FEMALE employees who have joined after '1986-01-01'.

(v)
```
SELECT COUNT(*),DCODE FROM EMPLOYEE
GROUP BY DCODE HAVING COUNT(*)>1;
```

(vi)
```
SELECT DISTINCT DEPARTMENT FROM DEPT;
```

(vii)
```
SELECT NAME,DEPARTMENT FROM EMPLOYEE
E,DEPT D WHERE E.DCODE=D.DCODE AND
ENO<1003;
```

(viii)
```
SELECT MAX(DOJ), MIN(DOB) FROM
EMPLOYEE;
```

6(a). Verify the following using Boolean Laws:

```
U' + V = U'V' + U'.V + U.V
```

6(b). Draw the Logic Circuit for the following Boolean Expression:

```
(X'+Y).Z + W'
```

6(c). Derive a Canonical POS expression for a Boolean function F, represented by the following truth table:

P	Q	R	F(P,Q,R)
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

6(d). Reduce the following Boolean Expression to its simplest form using K-Map:

```
F(X,Y,Z,W) = Σ(0,1,4,5,6,7,8,9,11,15)
```

7(a). Illustrate the layout for connecting 5 computers in a Bus and a Star topology of Networks.

7(b). What kind of data gets stored in cookies and how is it useful?

7(c). Differentiate between packet switching over message switching?

7(d). Out of the following, which is the fastest (i) wired and (ii) wireless medium of communication?

Infrared, Coaxial Cable, Ethernet Cable, Microwave, Optical Fiber

7(e). What is Trojan Horse?

7(f). Out of the following, which all comes under cyber crime?

(i) Stealing away a brand new hard disk from a showroom.
(ii) Getting in someone's social networking account without his consent and posting on his behalf.
(iii) Secretly copying data from server of an organization and selling it to the other organization.
(iv) Looking at online activities of a friends blog.

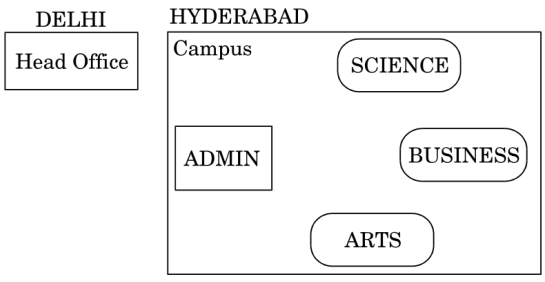
7(g). Xcelencia Edu Services Ltd. is an educational organization. It is planning to set up its India campus at Hyderabad with its head office at Delhi. The Hyderabad campus has 4 main buildings - ADMIN, SCIENCE, BUSINESS and ARTS. You as a network expert have to suggest the best network related solutions for their problems raised in (i) to (iv), keeping in mind the distances between the buildings and other given parameters.

Shortest distances between various buildings:

ADMIN to SCIENCE	65 m
ADMIN to BUSINESS	100 m
ADMIN to ARTS	60 m
SCIENCE to BUSINESS	75 m
SCIENCE to ARTS	60 m
BUSINESS to ARTS	50 m
DELHI Head Office to HYDERABAD Campus	1600 Km

Number of computers installed at various buildings are as follows:

ADMIN	100
SCIENCE	85
BUSINESS	40
ARTS	12
DELHI Head Office	20



7(g)(i). Suggest the most appropriate location of the server inside the HYDERABAD campus (out of the 4 buildings), to get the best connectivity for maximum number of computers. Justify your answer.

7(g)(ii). Suggest and draw the cable layout to efficiently connect various buildings within the HYDERABAD campus for connecting the computers.

7(g)(iii). Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet uses within the campus?

7(g)(iv). Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of HYDERABAD campus and DELHI Head Office?

(A) E-mail (B) Text Chat
(C) Video Conferencing (D) Cable TV

- End of Question Paper -