

CGS600A: Computational Tools in Cognitive Science

Quiz #1

Max marks: 40

Time:30 minutes

3 Oct. 2018

1. You can only refer to your own handwritten class notes and nothing else.
2. Where needed assume that code fragments are typed into the Python interpreter.
3. Any code is shown using typewriter font like **this**.
4. If you think executing the code will lead to an error or an exception then indicate the error/ exception.

1. The class `Sort` (see code below) sorts a list of entities that can be compared using a compare function. Sorting is being done using a merge-sort method. The `merge` operation merges two sorted lists to produce a single sorted list. And the `sortfn` sorts the list passed as argument using the comparison function `_cmpfn` available in the class.
 - (a) Some code indicated by `??1??` to `??8??` is missing. Fill in the missing code so that the class functions correctly.
 - (b) Assuming the class `Sort` has been read into the interpreter write the statement(s) you will type in the interpreter that will allow you to sort in descending order the contents of list `L` that has comparable elements. How will you confirm that `L` has been sorted?

```
class Sort:
    def __init__(self, l=[], f=??1??):
        self._lst=l
        # Default comparison function sorts in ascending order
        self._cmpfn=f #comparison function

    def getlst(self):
        return self._lst

    def setlst(self, l):
        self._lst=l

    def setcmpfn(self, f):
        self._cmpfn=f

    def sort(self):
        def merge(l1, l2):
            # merges two sorted lists to produce single sorted list.
            l=[]
            while l1!=[] and l2!=[]:
                if ??2??:
                    ??3??
                else:
```

```

        l.append(l2.pop(0))
    if l1==[]:
        ??4??
    else:
        ??5??
    return l

def sortfn(l):
    n=len(l)
    if n<2:
        return l
    else: #merge two approx. equal sized sorted lists
        return merge(sortfn(??6??), sortfn(??7??))

self.setlst(??8??)

```

[4×8,(6,2)=40]