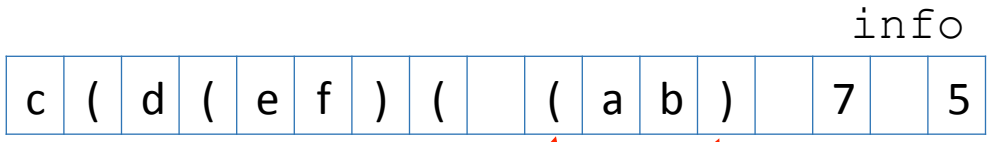
CSc 120
Introduction to Computer Programming II

CODE EXAMPLES 04 

Some code from assg 5

1. Parsing input lines




```
class Team:

    def __init__(self, info):
        conf_start = info.rfind('(')
        conf_stop = info.rfind(')')
        conf_name = info[conf_start+1:conf_stop]
        team_name = info[:conf_start]
        info_rest = info[(conf_stop+1):]
        info_list = info_rest.split()

        self._name = team_name.strip()
        self._conf = conf_name
        ...
```

2. Creating a ConferenceSet

```
def main():

    ...
    confs = ConferenceSet()
    infile = open(infile_name)
    for line in infile:
        if line[0] == '#':          # skip comments
            continue
        team = Team(line)
        confs.add(team)
    ....
```

3. Adding a team to a ConferenceSet

```
class ConferenceSet:
    …
    def add(self, team):
        for conf in self._confs:
            if team.conf() == conf.name():
                conf.add(team)

                assert team in conf
                return

        newconf = Conference(team.conf())
        newconf.add(team)
        self._confs.append(newconf)
```

a list of conferences in the set

4. Adding a team to a ConferenceSet

```
class Conference:
    def __init__(self, name):
        self._name = name
        self._teams = []
    ...
    def add(self, team):
        assert team.conf() == self._name
        self._teams.append(team)
```

Some style comments

```
def add(self,team):        # adding to ConferenceSet
    flag = False
    conference_name = team.conf()
    if len(self._list) == 0:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
    else:
        for i in range (0, len(self._list)):
            if conference_name == self._list[i].name():
                flag = True
                self._list[i].add(team)
        if flag == False:
            conference = Conference(conference_name)
            conference.add(team)
            self._list.append(conference)
```

```
def add(self,team):        # adding to ConferenceSet
    flag = False
    conference_name = team.conf()
    if len(self._list) == 0:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
    else:
        for i in range (0, len(self._list)):
            if conference_name == self._list[i].name():
                flag = True
                self._list[i].add(team)
        if flag == False:
            conference = Conference(conference_name)
            conference.add(team)
            self._list.append(conference)
```

better is:
for conf in self._list:

```
def add(self,team):        # adding to ConferenceSet
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    if len(self._list) == 0:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
    else:
        for conf in self._list:
            if conference_name == conf.name():
                flag = True
                conf.add(team)
        if flag == False:
            conference = Conference(conference_name)
            conference.add(team)
            self._list.append(conference)
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    else:
        for conf in self._list:
            if conference_name == conf.name():
                flag = True
                conf.add(team)
        if flag == False:
            conference = Conference(conference_name)
            conference.add(team)
            self._list.append(conference)
```

self._list == []

team.conf() not in self._list

didn't find conference_name in self._list

```
def add(self,team):        # adding to ConferenceSet
    flag = False
    conference_name = team.conf()
    for conf in self._list:
        if conference_name == conf.name():
            flag = True
            conf.add(team)
            return
    if flag == False:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
```

- search self._list for the conference
- if found, add team to it
- then we're done: return

if we got here, we didn't find it

after cleaning up

```
def add(self,team):        # adding to ConferenceSet
    flag = False
    conference_name = team.conf()
    for conf in self._list:
        if conference_name == conf.name():
            flag = True
            conf.add(team)
            return
    if flag == False:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
```

- search self._list for the conference
- if found, add team to it
- then we're done: return

if we get here, we didn't find it

after cleaning up

Final cleaned-up code

```
def add(self,team):          # adding to ConferenceSet
    conference_name = team.conf()
    for conf in self._list:
        if conference_name == conf.name():
            conf.add(team)
            return

    conference = Conference(conference_name)
    conference.add(team)
    self._list.append(conference)
```

Before and after

original

```
def add(self,team):          # adding to ConferenceSet
    flag = False
    conference_name = team.conf()
    if len(self._list) == 0:
        conference = Conference(conference_name)
        conference.add(team)
        self._list.append(conference)
    else:
        for i in range (0, len(self._list)):
            if conference_name == self._list[i].name():
                flag = True
                self._list[i].add(team)
        if flag == False:
            conference = Conference(conference_name)
            conference.add(team)
            self._list.append(conference)
```

cleaned-up

```
def add(self,team):          # adding to ConferenceSet
    conference_name = team.conf()
    for conf in self._list:
        if conference_name == conf.name():
            conf.add(team)
            return

    conference = Conference(conference_name)
    conference.add(team)
    self._list.append(conference)
```

Summary

- Use **for … in** to iterate through a list or dictionary
- Be *extremely* suspicious of flags
  - very often, they complicate the code unnecessarily
  - very often, code restructuring can get rid of them
  - if you *really* need a flag, give it a descriptive name
- Examine the code for repeated code blocks
  - understand:
    - what they are doing
    - why they are repeated
  - figure out:
    - can the repetition be eliminated?
- Flags + repetition ≡ bad