# A+ Computer Science October 2012

## Computer Science Competition

### Hands-On Programming Set

JUDGE PACKET

| Number | Name |
|---|---|
| Problem 1 | Part Of Speech |
| Problem 2 | Touchy |
| Problem 3 | Almost |
| Problem 4 | Integral |
| Problem 5 | War |
| Problem 6 | Major MalFunction |
| Problem 7 | Periodic Words |
| Problem 8 | MixEmUp |
| Problem 9 | Taxing |
| Problem 10 | Speed |
| Problem 11 | Resize |
| Problem 12 | Puddle Bop |

# 0. DryRun

Program Name: DryRun.java Input File: dryrun.dat

**Example: Input file**

```
8
history
algebra
chemistry
physics
computer science
you
me
everyone
```

**Output to screen:**

```
I like history.
I like algebra.
I like chemistry.
I like physics.
I like computer science.
I like you.
I like me.
I like everyone.
```

# 1. Part Of Speech

Program Name: PartOfSpeech.java Input File: partofspeech.dat

**Example Input File**

```
a an the this
have has had do did does would could should can may might must
will shall am are is was were be been being
3
die 4
He will die if he does not get a transplant.
The car can die if you get water in the fuel tank.
We will roll a die to move the car in Monopoly.
A die was placed in the machine to create our template.
face 2
I can face my fears.
Please don't hit me in the face!
crack 3
I can see a crack in the egg.
I shall crack the egg.
Please do crack the egg.
```

**Output to screen:**

```
VERB
VERB
NOUN
NOUN

VERB
NOUN

NOUN
VERB
VERB
```

# 2. Touchy

Program Name: Touchy.java Input File: touchy.dat

**Example Input File**

```
9
0 1
1 2
2 3
0 20
3 22
3 7
0 0
3 1
3 5
```

**Output to screen:**

```
1
3
1
0
1
2
0
0
0
```

# 3. Almost

Program Name: Almost.java Input File: almost.dat

**Example Input File**

```
5
XOO
 X
 O
OXO
 X
  O

OXO
  X
XOX
XOO
  X

OXX
XOO
```

**Output to screen:**

```
3 3
3 2
1 1
3 1
1 3
```

# 4. Integral

Program Name: Integral.java Input File: integral.dat

**Example Input File**

```
4
0 2.5 0.1
0 10 1.0
0 10 0.05
0 10 0.001
```

**Output to screen:**

```
23.200000
955.000000
1102.012500
1110.161005
```

---

# 5. War

Program Name: War.java Input File: war.dat

**Example Input file**

```
3
A K Q J 9 A K Q J 9 A K Q J 9
2 3 4 5 6 2 3 4 5 6 2 3 4 5 6
A K 10 5 J 9 A 4 5 6 2 3 4 5 Q
10 A 4 5 6 2 3 6 K Q J 9 A K J
A K 10 5 J A 7 5 6 2 3 4 5 Q K
A 4 5 6 2 3 6 4 Q J 9 A K J 2
```

**Output to screen:**

```
30 0
6 24
20 10
```

# 6. Major MalFunction

Program Name: MalFunction.java Input File: malfunction.dat

**Example Input file**

```
4
1 1 1 1
1 1 1 0.5
5 4 3 2
2 3 4 0.75
```

**Output to screen:**

```
3.000
1.750
31.000
7.375
```

---

# 7. Periodic Words

Program Name: Periodic.java Input File: periodic.dat

**Example Input file**

```
H He Li Be B C N O F Ne Na Mg Al Si P S Cl Ar K Ca Sc Ti V Cr Mn
Fe Co Ni Cu Zn Ga Ge As Se Br Kr Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn
Sb Te I Xe Cs Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re
Os Ir Pt Au Hg Tl Pb Bi Po At Rn Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm
10
chocolate
rose
grass
champions
north
south
uil
cs
noon
oshkosh
```

**Output to screen:**

```
yes
no
no
yes
no
yes
no
yes
yes
yes
```

---

# 8. MixEmUp

Program Name: MixEmUp.java Input File: mixemup.dat

**Example Input File**

```
4
2 5 8 K K 10 9 5 7 7 8
A K Q J 10 9 8 7 6 5 4 3 2
2 2 3 3 4 4 5 5 6 6 7 7 8 8
2 3 3 4 Q J J A K A K 9 9 10 8 10 8 8 5 5
```

**Output to screen:**

```
2 5 8 K 10 9 5 7 8 K 7
A K Q J 10 9 8 7 6 5 4 3 2
2 3 4 5 6 7 8 2 3 4 5 6 7 8
2 3 4 Q J A K A K 9 10 8 10 8 5 3 J 9 8 5
```

---

# 9. Taxing

Program Name: Taxing.java Input File: taxing.dat

**Example Input file**

```
4
100.00
59.99
10.01
999.99
```

**Output to screen:**

```
$108.25
$64.94
$10.84
$1082.49
```

# 10. Speed

Program Name: Speed.java Input File: speed.dat

**Example Input file**

```
5
1
5
12
20
99
```

**Output to screen:**

```
0.2
1.0
2.4
4.0
19.8
```

---

# 11. Resize

Program Name: Resize.java Input File: resize.dat

**Example Input file**

```
4
5 by 7 to 3 by 5
8 by 10 to 5 by 7
8 by 10 to 4 by 6
5 by 7 to 8 by 10
```

**Output to screen:**

```
3.00 by 4.20 or 3.57 by 5.00
5.00 by 6.25 or 5.60 by 7.00
4.00 by 5.00 or 4.80 by 6.00
8.00 by 11.20 or 7.14 by 10.00
```

# 12. Puddle Bop

Program Name: Puddle.java Input File: puddle.dat

**Example Input file**

```
15 12
GWGGGGRRGGGG
WWGGGGGSSGGS
RSGGGGSSSSSS
SSSWWWGGGGSG
SSRWWGGGGGSS
RRRWGGGGGGSS
GGGGRRRGGGSS
GGGSSSSSWWWW
WWWGGWWWWRWW
GWWWWWGGSSWW
GGWWWWWRRSSW
RRRRRRRRRRWW
WWWWWWWWWWWW
WWWWWWWWWWWW
WWWWWRRRRRRW
8
0 0
1 1
2 2
2 5
4 4
9 1
9 6
9 0
```

**(Continued on next page…)**

**(Problem 12 contin.)**

**Output to screen:**

```
OK
PUDDLE
OK
OK
PUDDLE
OOPS
OK
OK

GFGGGGRRGGGG
FFGGGGGSSGGS
RSGGGGSSSSSS
SSSFFFGGGGSG
SSRFFGGGGGSS
RRRFGGGGGGSS
GGGGRRRGGGSS
GGGSSSSSWWWW
WWWGGWWWWRWW
GWWWWWGGSSWW
GGWWWWWRRSSW
RRRRRRRRRRWW
WWWWWWWWWWWW
WWWWWWWWWWWW
WWWWWRRRRRRW
```