

```
1: #!/afs/cats.ucsc.edu/courses/cmps112-wm/usr/smalltalk/bin/gst -f
2: "$Id: outbits.st,v 1.2 2012-03-06 22:33:59-08 - - $"
3: execname := '$RCSfile: outbits.st,v $' =~ '.*: (.*) ,v.*' at: 1.
4:
5: ""
6: " Opens a file given as the first argument and writes out bits."
7: ""
8:
9: nl := Character nl.
10:
11: Object subclass: OutBits [
12:   |bitIndex currentByte myStream|
13:   OutBits class >> new [
14:     self shouldNotImplement.
15:   ]
16:   OutBits class >> new: fileStream [
17:     |result|
18:     result := super new.
19:     result init: fileStream.
20:     ^result
21:   ]
22:   clearByte [
23:     bitIndex := 8.
24:     currentByte := 0.
25:   ]
26:   init: fileStream [
27:     myStream := fileStream.
28:     self clearByte.
29:   ]
30:   flushByte [
31:     currentByte = 8 ifFalse: [
32:       myStream << currentByte asCharacter.
33:       self clearByte.
34:     ]
35:   ]
36:   writeBit: bit [
37:     currentByte := currentByte bitAt: bitIndex put: bit.
38:     bitIndex := bitIndex - 1.
39:     bitIndex = 0 ifTrue: [self flushByte].
40:   ]
41: ]
42:
```

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43:
44: " Output of bitstream hello world."
45: bitArray := #(
46:   0 1 0 0   1 0 0 0
47:   0 1 1 0   0 1 0 1
48:   0 1 1 0   1 1 0 0
49:   0 1 1 0   1 1 0 0
50:   0 1 1 0   1 1 1 1
51:   0 0 1 0   1 1 0 0
52:   0 0 1 0   0 0 0 0
53:   0 1 0 1   0 1 1 1
54:   0 1 1 0   1 1 1 1
55:   0 1 1 1   0 0 1 0
56:   0 1 1 0   1 1 0 0
57:   0 1 1 0   0 1 0 0
58:   0 0 1 0   0 0 0 1
59:   0 0 0 0   1 0 1 0
60: ).
61:
62: writeBitArray := [:outfile|
63:   |outBytes|
64:   outBytes := OutBits new: outfile.
65:   bitArray do: [:bit| outBytes writeBit: bit].
66:   outBytes flushByte.
67: ].
68:
69: Smalltalk arguments size = 0
70:   ifTrue: [writeBitArray value: stdout]
71:   ifFalse: [
72:     |outfilename|
73:     outfilename := Smalltalk arguments at: 1.
74:     [ |outfile|
75:       outfile := FileStream open: outfilename mode: FileStream write.
76:       writeBitArray value: outfile.
77:       outfile close.
78:     ] on: SystemExceptions.FileError do: [:signal |
79:       |errno|
80:       errno := File errno.
81:       stdout flush.
82:       stderr << execname << ' : ' << filename << ' : '
83:         << signal messageText << nl.
84:       stderr flush.
85:     ]
86:   ]
87:
88: "TEST: outbits.st"
89: "TEST: outbits.st | od -c"
90: "TEST: outbits.st /tmp/fool"
91: "TEST: cat -nv /tmp/fool"
92: "TEST: od -c /tmp/fool"
93:
```

```
1: *****mks***** outbits.st 2>&1
2: Hello, World!
3: \000*****status: 0x0000
4:
5: *****mks***** outbits.st | od -c 2>&1
6: 0000000  H   e   l   l   o   ,           W   o   r   l   d   !   \n   \0
7: 0000017
8: *****status: 0x0000
9:
10: *****mks***** outbits.st /tmp/fool 2>&1
11: *****status: 0x0000
12:
13: *****mks***** cat -nv /tmp/fool 2>&1
14:      1  Hello, World!
15:      2  ^@*****status: 0x0000
16:
17: *****mks***** od -c /tmp/fool 2>&1
18: 0000000  H   e   l   l   o   ,           W   o   r   l   d   !   \n   \0
19: 0000017
20: *****status: 0x0000
21:
```