

```
1: #!/afs/cats.ucsc.edu/courses/cse112-wm/usr/smalltalk/bin/gst -f
2: "$Id: outbits.st,v 1.2 2020-01-31 17:05:02-08 - - $"
3: execname := '$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:     bitIndex = 8 ifFalse: [
32:       myStream nextPutByte: currentByte.
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:   1 0 1 0   1 0 1 1
47:   0 1 0 0   1 0 0 0
48:   0 1 1 0   0 1 0 1
49:   0 1 1 0   1 1 0 0
50:   0 1 1 0   1 1 0 0
51:   0 1 1 0   1 1 1 1
52:   0 0 1 0   1 1 0 0
53:   0 0 1 0   0 0 0 0
54:   0 1 0 1   0 1 1 1
55:   0 1 1 0   1 1 1 1
56:   0 1 1 1   0 0 1 0
57:   0 1 1 0   1 1 0 0
58:   0 1 1 0   0 1 0 0
59:   0 0 1 0   0 0 0 1
60:   1 0 1 1   1 0 1 1
61:   0 0 0 0   1 0 1 0
62:   0 0 1 1   0 0 1 0
63:   1 1 0 1   0 1 1 1
64:   0 0 1 1   0 0 1 0
65:   0 0 1 1   1 1 0 1
66:   0 0 1 1   0 1 0 0
67:   0 0 0 0   1 0 1 0
68: ).
69:
```

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70:
71: writeBitArray := [:outfile|
72:   |outBytes|
73:   outBytes := OutBits new: outfile.
74:   bitArray do: [:bit| outBytes writeBit: bit].
75:   outBytes flushByte.
76: ].
77:
78: Smalltalk arguments size = 0
79:   ifTrue: [writeBitArray value: stdout]
80:   ifFalse: [
81:     |outfilename|
82:     outfile := Smalltalk arguments at: 1.
83:     [ |outfile|
84:       outfile := FileStream open: outfilemode mode: FileStream write.
85:       writeBitArray value: outfile.
86:       outfile close.
87:     ] on: SystemExceptions.FileError do: [:signal |
88:       |errno|
89:       errno := File errno.
90:       stdout flush.
91:       stderr << execname << ' : ' << filename << ' : '
92:         << signal messageText << nl.
93:       stderr flush.
94:     ]
95:   ]
96:
97: "TEST: outbits.st"
98: "TEST: outbits.st | od -c"
99: "TEST: outbits.st /tmp/outbits.tmp"
100: "TEST: cat -n /tmp/outbits.tmp"
101: "TEST: od -c /tmp/outbits.tmp"
102: "TEST: binarydump/binarydump /tmp/outbits.tmp"
103: "TEST: binarydump/hexadecimaldump /tmp/outbits.tmp"
104:
105:
```

```

1: .....
2: mkst.perl: outbits.st
3: .....
4: «Hello, World!»
5: 2×2=4
6: .....
7: Exit status 0
8: .....
9: mkst.perl: outbits.st | od -c
10: .....
11: 00000000 « H e l l o , W o r l d ! » \n
12: 00000020 2 × 2 = 4 \n
13: 00000026
14: .....
15: Exit status 0
16: .....
17: mkst.perl: outbits.st /tmp/outbits.tmp
18: .....
19: .....
20: Exit status 0
21: .....
22: mkst.perl: cat -n /tmp/outbits.tmp
23: .....
24: 1 «Hello, World!»
25: 2 2×2=4
26: .....
27: Exit status 0
28: .....
29: mkst.perl: od -c /tmp/outbits.tmp
30: .....
31: 00000000 « H e l l o , W o r l d ! » \n
32: 00000020 2 × 2 = 4 \n
33: 00000026
34: .....
35: Exit status 0
36: .....
37: mkst.perl: binarydump/binarydump /tmp/outbits.tmp
38: .....
39: .....
40: Exit status -1
41: .....
42: mkst.perl: binarydump/hexadecimaldump /tmp/outbits.tmp
43: .....
44: .....
45: Exit status -1

```