| Level 1 Instruction | Set        |   |                |                |
|---------------------|------------|---|----------------|----------------|
|                     |            |   |                |                |
| Step                | Instructio | Instruction                                   |                |                |
| 0                   | set        | Write 0 in cell a                             |                |                |
| 1                   | set        | Write 1 in cell b                             |                |                |
| 2                   | set        | Write 7 in cell c                             |                |                |
| 3                   | set        | Write 5 in cell d                             |                |                |
| 4                   | plot       | Draw pixel at column (cell a), row (cell a)   |                |                |
| 5                   | +          | Add (cell a) and (cell b). Write result in ce | ell a.         |                |
| 6                   | plot       | Draw pixel at column (cell a), row (cell a)   |                |                |
| 7                   | <          | Compare cell a and cell c.                    |                |                |
| 8                   | jump       | Compare cell e                                |                |                |
|                     |            | If you get here, no more steps, then you      | are done! Chec | k your answer! |

| Memory Registers |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| а                | b |   | С |   | d |   | е | f | g | h | i | j | k | I | m | n | р |
| 0                |   | 1 |   | 7 |   | 5 | 1 |   |   |   |   |   |   |   |   |   |   |
| 1                |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| 2                |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| 3                |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| 4                |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| 5                |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| 6                |   |   |   |   |   |   | 0 |   |   |   |   |   |   |   |   |   |   |
| 7                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Moni | itor |  |  |  |  |  |
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| Level 2 Instruction<br>Set |                      |   |                              |  |  |  |  |  |
|----------------------------|----------------------|---|------------------------------|--|--|--|--|--|
|                            |                      |   |                              |  |  |  |  |  |
| Step                       | Instructi<br>on Type | Instruction   |                              |  |  |  |  |  |
| 0                          | set                  | Write 0 in cell a   |                              |  |  |  |  |  |
| 1                          | set                  | Write 0 in cell b   |                              |  |  |  |  |  |
| 2                          | set                  | Write 9 in cell c   |                              |  |  |  |  |  |
| 3                          | set                  | Write 1 in cell d   |                              |  |  |  |  |  |
| 4                          | set                  | Write 1 in cell e   |                              |  |  |  |  |  |
| 5                          | set                  | Write 7 in cell f   |                              |  |  |  |  |  |
| 6                          | set                  | Write 17 in cell g  |                              |  |  |  |  |  |
| 7                          | plot                 | Draw pixel at column (cell a), row (cell b)   |                              |  |  |  |  |  |
| 8                          | +                    | Add (cell a) and (cell d). Write result in cell a.  |                              |  |  |  |  |  |
| 9                          | +                    | Add (cell b) and (cell e). Write result in cell b.  |                              |  |  |  |  |  |
| 10                         | <                    | Compare cell b and cell c  If (cell b) is less than (cell c) write 1 in cell h  Otherwise write 0 in cell h |                              |  |  |  |  |  |
| 11                         | jump                 | Compare cell h  If (cell h) is 1  go to step (cell f) and continue  Otherwise ignore this step and continue |                              |  |  |  |  |  |
| 12                         | jump                 | Compare cell i  If cell i is 1  go to step cell g and continue  Otherwise  ignore this step and continue    |                              |  |  |  |  |  |
| 13                         | set                  | Write 1 in cell i   |                              |  |  |  |  |  |
| 14                         | set                  | Write -1 in cell b  |                              |  |  |  |  |  |
| 15                         | set                  | Write -1 in cell d  |                              |  |  |  |  |  |
| 16                         | jump                 | Compare cell i  If (cell i) is 1  go to step cell f and continue Otherwise ignore this step and continue    |                              |  |  |  |  |  |
|                            |                      | If you get here, no more steps, then you  | are done! Check your answer! |  |  |  |  |  |

| Memory Registers |    |   |   |   |    |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |
|------------------|----|---|---|---|----|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|
| а                | b  | С |   | d |    | е |   | f |   | g |    | h |   | i | j | k | I | m | n | р |
| 0                | 0  | Ç | 9 |   | 1  |   | 1 |   | 7 |   | 17 |   | 1 | 1 |   |   |   |   |   |   |
| 1                | 1  |   |   |   | -1 |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 2                | 2  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 3                | 3  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 4                | 4  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 5                | 5  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 6                | 6  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 7                | 7  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 8                | 8  |   |   |   |    |   |   |   |   |   |    |   | 0 |   |   |   |   |   |   |   |
| 9                | 9  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 8                | -1 |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 7                | 0  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 6                | 1  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 5                | 2  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 4                | 3  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 3                | 4  |   | 4 |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 2                | 5  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 1                | 6  |   |   |   |    |   |   |   |   |   |    |   | 1 |   |   |   |   |   |   |   |
| 0                | 7  |   | _ |   |    |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |
|                  | 8  |   |   |   |    |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |

| Mo<br>nito |   |   |   |   |   |   |   |   |   |   |
|------------|---|---|---|---|---|---|---|---|---|---|
|            | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0          |   |   |   |   |   |   |   |   |   |   |
| 1          |   |   |   |   |   |   |   |   |   |   |
| 2          |   |   |   |   |   |   |   |   |   |   |
| 3          |   |   |   |   |   |   |   |   |   |   |
| 4          |   |   |   |   |   |   |   |   |   |   |
| 5          |   |   |   |   |   |   |   |   |   |   |
| 6          |   |   |   |   |   |   |   |   |   |   |
| 7          |   |   |   |   |   |   |   |   |   |   |
| 8          |   |   |   |   |   |   |   |   |   |   |
| 9          |   |   |   |   |   |   |   |   |   |   |