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ANALYSIS

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INPUT:

OUTPUT:

I: INTEGER

INTERNAL DATA:

CONSTANTS:

MIN: INTEGER

MAX: INTEGER

VARIABLES:

N: INTEGER

PRIME: BOOLEAN;

PROCEDURE:

- FOR LOOP STARTS i WITH VARIABLE MIN VALUE TO VARIABLE MAX, INCREMENTING BY 1 THEN THE CODE DO:

- STARTS N = 2

- STARTS PRIME = TRUE;

- WHILE PRIME IS TRUE AND N SMALLER THAN i

- IF i MOD N (MOD IS THE REST OF DIVISION) IS ZERO.

PRIME = TRUE

- ELSE

N = N+1

- IF PRIME is TRUE

WRITE i

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PSEUDOCODE

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CONSTANTS:

MIN: INTEGER

MAX: INTEGER

VARIABLES:

N: INTEGER

PRIME: BOOLEAN;

START:

|  |  |
| --- | --- |
| 1. | CONST INT MIN = 1 |
| 2. | CONST INT MAX = 50000 |
| 3. | FOR LOOP i FROM MIN TO MAX whit INC in 1 |
| 4. | N = 2; |
| 5. | PRIME = TRUE; |
| 6. | WHILE (PRIME && N< i) |
| 7. | If (I % N == 0) |
| 8. | PRIME = FALSE; |
| 9. | ELSE |
| 10. | N = N + 1; |
| 11. | END IF |
| 12. | END WHILE |
| 13. | IF (PRIME == TRUE) |
| 14. | WRITE i |
| 15. | END IF |
| 16. | END FOR LOOP |

END;

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TRACE TABLE

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|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | MIN | MAX | I | N | PRIME | N < I | PRIME &&  N < i | I % N | PRIME | N | OUTPUT |
| I |
| 1. | CONST INT MIN = 1 | 1 | 50000 | 1 | 2 | TRUE | FALSE | FALSE |  | TRUE | 2 | 1 |
| 2. | CONST INT MAX = 50000 | 1 | 50000 | 2 | 2 | TRUE | FALSE | FALSE |  | TRUE | 2 | 2 |
| 3. | FOR LOOP i FROM MIN TO MAX WHIT INC in 1 | 1 | 50000 | 3 | 2 | TRUE | TRUE | TRUE | 1 | TRUE | 2 | 3 |
| 4. | N = 2; | 1 | 50000 | 4 | 2 | TRUE | TRUE | TRUE | 0 | FALSE | 2 |  |
| 5. | PRIME = TRUE; | 1 | 50000 |  | 2 | FALSE | TRUE | FALSE |  | FALSE |  |  |
| 6. | WHILE (PRIME && N< i) | 1 | 50000 | 5 | 2 | TRUE | TRUE | TRUE | 1 | TRUE | 2 | 5 |
| 7. | If (I % N == 0) | 1 | 50000 | 6 | 2 | TRUE | TRUE | TRUE | 0 | FALSE | 2 |  |
| 8. | PRIME = FALSE; | 1 | 50000 | 7 | 2 | TRUE | TRUE | TRUE | 1 | TRUE | 3 |  |
| 9. | ELSE | 1 | 50000 |  | 3 | TRUE | TRUE | TRUE | 1 | TRUE | 4 |  |
| 10. | N = N + 1; | 1 | 50000 |  | 4 | TRUE | TRUE | TRUE | 3 | TRUE | 5 |  |
| 11. | END IF | 1 | 50000 |  | 5 | TRUE | TRUE | TRUE | 2 | TRUE | 6 |  |
| 12. | END WHILE | 1 | 50000 |  | 6 | TRUE | TRUE | TRUE | 1 | TRUE | 7 |  |
| 13. | IF (PRIME == TRUE) | 1 | 50000 |  | 7 | TRUE | FALSE | FALSE |  | TRUE |  | 7 |
| 14. | WRITE i | 1 | 50000 | 8 | 2 | TRUE | TRUE | TRUE | 0 | FALSE |  |  |
| 15. | END IF | 1 | 50000 | 9 | 2 | TRUE | TRUE | TRUE | 1 | TRUE | 3 |  |
| 16. | END FOR LOOP | 1 | 50000 |  | 3 | TRUE | TRUE | TRUE | 0 | FALSE |  |  |
|  |  |  |  | 10 | 2 | TRUE | TRUE | TRUE | 0 | FALSE |  |  |
|  |  |  |  | 11 | 2 | TRUE | TRUE | TRUE | 1 | TRUE | 3 |  |
|  |  |  |  |  | 3 | TRUE | TRUE | TRUE | 1 | TRUE | 4 |  |
|  |  |  |  |  | 4 | TRUE | TRUE | TRUE | 3 | TRUE | 5 |  |
|  |  |  |  |  | 5 | TRUE | TRUE | TRUE | 1 | TRUE | 6 |  |
|  |  |  |  |  | 6 | TRUE | TRUE | TRUE | 5 | TRUE | 7 |  |
|  |  |  |  |  | 7 | TRUE | TRUE | TRUE | 4 | TRUE | 8 |  |
|  |  |  |  |  | 8 | TRUE | TRUE | TRUE | 3 | TRUE | 9 |  |
|  |  |  |  |  | 9 | TRUE | TRUE | TRUE | 2 | TRUE | 10 |  |
|  |  |  |  |  | 10 | TRUE | TRUE | TRUE | 1 | TRUE | 11 |  |
|  |  |  |  |  | 11 | TRUE | FALSE | FALSE |  | TRUE |  | 11 |
|  |  |  |  | 12 | 2 | TRUE | TRUE | TRUE | 0 | FALSE |  |  |

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