CP468 AI - ASSIGNMENT 2

NOVEMBER 11, 2019

MAX NIEBERGALL 160623100 SRIRAM VASUTHEVAN 170408710 JUSTIN HARROTT 161449800 RASHA NASRI 164161160 To run this program, you must have python 3.7 or higher installed. https://www.python.org/downloads/

Next, install matplotlib and numpy using pip. https://pip.pypa.io/en/stable/quickstart/

Then, you can run test.py. By default it will run on the the 98th, 99th, 100th, and 101st boards in sudoku_small.csv. The first two boards can/will be solved with AC3, while the last two boards can/will be solved with backtracking. The program will create a graph of the queue lengths at each step in the AC3 algorithm, for each sudoku it solves. This graph is saved in the queue length.png file.

Input is taken from sudoku_small.csv. The format of that file is that the first line contains "quizzes, solutions\n" while all of the following lines contain two comma separated lists of numbers. The numbers represent the board, with zeros representing empty spaces. The board is arranged by filling in the rows from left to right and then top to bottom with the numbers.

```
import sudoku board
import numpy as np
import matplotlib.pyplot as plt
from typing import Tuple, Set, Dict
def PrepBoard(path: str = r"A2\sudoku small.csv", n: int = 1) -> Tuple["np.ndarray[np.int8]",
                                                                        Set[Tuple[Tuple[int, int],
                                                                                   Tuple[int, int
                                                                                   111,
                                                                        Dict[Tuple[int, int],
                                                                             Set[int]]]:
    11 11 11
   Loads the nth board, generrates the constraints and domains
   Args:
        board: Board to be printed
        empty value: Values to be printed if cell is empty
   Print:
       NO SOL => There is no solution
        FAIL => There is a implementation error
        SOLVED => The board has been fully solved
        PARTIAL SOLVE => The board has been partial solved
   board = sudoku board.load file(path=path, n=n)[-1]
   constraints = sudoku board.create constraint set()
   domains = sudoku board.create domain set(board)
   return board, constraints, domains
def testBoard(n: int = 1) -> None:
   Prints the nth board, applies AC-3 to nth board, prints the board and
   Args:
        board: Board to be printed
        empty value: Values to be printed if cell is empty
   Print:
       NO SOL => There is no solution
        FAIL => There is a implementation error
        SOLVED => The board has been fully solved
        PARTIAL SOLVE => The board has been partial solved
   pre, constraints, domains = PrepBoard(n)
   post Domains = sudoku board.AC3(constraints, domains)
   print(f"Sudoku Board #{n}")
   sudoku_board.pretty_print_board(pre)
   if not post Domains:
        print("NO SOL: AC-3 has identified board #{n} has no solution")
   elif not sudoku board.validSolve(pre, sudoku board.domains2Board(post Domains)):
        print("FAIL: AC-3 has been implemented incorrectly")
```

```
for key, val in post Domains.items():
            print(f"{key} | {val}")
   elif sudoku board.solved(post Domains):
        print("SOLVED: AC-3 has fully solved the board")
        sudoku board.pretty print board(sudoku board.domains2Board(post Domains))
   else:
        print("PARTIAL SOLVE: AC-3 has partially solved the board")
        for key, val in post Domains.items():
            print(f"{key} | {val}")
        post Domains = sudoku board.backtracking search(post Domains)
        if not post Domains:
            print("NO SOL: BackTrack has identified board #{n} has no solution")
        elif not sudoku board.validSolve(pre, sudoku board.domains2Board(post Domains)):
            print("FAIL: BackTrack has been implemented incorrectly")
            for key, val in post Domains.items():
                print(f"{key} | {val}")
        elif sudoku board.solved(post Domains):
            print("SOLVED: BackTrack has fully solved the board")
            sudoku board.pretty print board(sudoku board.domains2Board(post Domains))
        else:
            print("NO SOL: BackTrack has partially solved the board")
def solve(pre: "np.ndarray[np.int8]") -> bool:
   Takes in a board and tries to solve it using AC-3 and BackTracking
   Aras:
       board: Board to be printed
   Print:
        Prints out the solved board or which algorithm failed and the domain set of the failed
    ,, ,, ,,
   constraints = sudoku board.create constraint set()
   domains = sudoku board.create domain set (pre)
   post Domains, qlen = sudoku board.AC3(constraints, domains, True)
   plt.plot(qlen)
   plt.xlabel("Step #")
   plt.ylabel ("Queue Length")
   plt.savefig("queue length")
   if not post_Domains:
        print("Board is not vaild")
        return False
   elif sudoku board.solved(post Domains):
        print("Board solved with AC3")
        sudoku board.pretty print domain (post Domains)
```

```
return True
   elif not sudoku board.validDomains(post Domains):
        print("AC-3 has created an invaild board")
        for key, val in post Domains:
            print(f"{key} | {val}")
        raise ValueError ("AC-3 has created an invaild board")
   else:
        print("AC-3 did not solve the board. Attepting to solve with backtracking...")
        post_Domains = sudoku_board.backtracking search(domains)
        if not post Domains:
           print("Board is not vaild")
            return False
        elif not sudoku board.solved(post Domains):
            print("Backtracking has not solved the board")
            for key, val in post_Domains:
                print(f"{key} | {val}")
            raise ValueError ("Backtracking has not solved the board")
        elif not sudoku board.validDomains(post Domains):
            print("AC-3 has created an invaild board")
            for key, val in post Domains:
                print(f"{key} | {val}")
            raise ValueError ("AC-3 has created an invaild board")
        else:
            print("Solved with backtracking:")
            sudoku board.pretty print domain(post Domains)
#solve(sudoku board.load file(path =r"A2\sudoku small.csv",n=1)[-1])
for i in range(98,102):
   solve(sudoku board.load file(path =r"A2\sudoku small.csv",n=i)[-1])
```

```
import numpy as np
from typing import List, Tuple, Set, Dict, Union
from collections import deque
from itertools import chain
from copy import deepcopy
EMPTY ENTRY = 0
CHAR WIDTH OF BOARD = 21
SIZE OF BOARD = 9
BLOCK SIZE = SIZE OF BOARD // 3
ALL CELLS = [(i, j) for i in range(SIZE OF BOARD) for j in range(SIZE OF BOARD)]
def pretty print board (board: "np.ndarray[np.int8]", empty value: str = " ") -> None:
    11 11 11
    Takes a in a board and pretty prints it
    Args:
        board: board to be printed
        empty value: value to be printed if cell is empty
    Print:
        board with empty value if the cell is empty
    print("-"*CHAR WIDTH OF BOARD)
    for row in range(SIZE OF BOARD):
        print("|", end="")
        print(("{} {} {} | *3).format(*
                                       map(lambda x: x if x != 0 else empty value, board[row])))
        if row % 3 == 2:
            print("-"*CHAR WIDTH OF BOARD)
def pretty print domain(domains: Dict[Tuple[int, int], Set[int]], empty value: str = " ") ->
None:
    11 11 11
    Takes in domains, converts into a board and pretty prints it. If there are multiple values
    in the domain of a cell, it prints empty value
    Args:
        domains: A dictionary with key: ALL CELLS val: domain set of cell
    Prints:
        The board with empty value if the domain of a cell has multiple values
    pretty print board(domains2Board(domains), empty value)
def domains2Board(domains: Dict[Tuple[int, int], Set[int]]) -> "np.ndarray[np.int8]":
    11 11 11
    Takes in domains and returns a board. If there are multiple values in the domain of a cell,
    it sets the value to 0.
```

```
domains: A dictionary with key: ALL CELLS val: domain set of cell
    Returns:
       board: the domain as a board
    # Unpacks one element sets and sets multi element sets to 0
    domains = {cell: 0 if len(domain) != 1 else next(iter(domain)) for cell, domain in domains.
    items()}
    # convert dictionary to ndarray
    return np.reshape(np.asarray(list(map(lambda x: domains[x[0]]),
                                           sorted(list(domains.items()))), np.int8),
                       (-1, SIZE OF BOARD))
def validSolve(pre: "np.ndarray[np.int8]", post: "np.ndarray[np.int8]") -> bool:
    Takes in a board before and after an algorithm has been applied and checks if the board
    is still an valid sudoku. Assumes that the pre algo board was valid.
    Args:
        pre: board before change
       post: board with new cell value for testing
    Returns:
            True if new boards are valid, else False
    # Check if there are duplicates or invalid characters in each row
    for row in post:
        domain = set(range(1, SIZE OF BOARD+1))
        for val in row:
            if val not in domain and val != 0:
                return False
            elif val != 0:
                domain.remove(val)
    # Check if there are duplicates or invalid characters in each col
    for col in post.transpose():
        domain = set(range(1, SIZE OF BOARD+1))
        for val in col:
            if val not in domain and val != 0:
                return False
            elif val != 0:
                domain.remove(val)
    BLOCK TOP LEFT = [(x, y) \text{ for } x \text{ in range}(0, 9, 3) \text{ for } y \text{ in range}(0, 9, 3)]
    # Check if there are duplicates or invalid characters in each block
    for block cell in BLOCK TOP LEFT:
        domain = set(range(1, SIZE OF BOARD+1))
        x_coord, y_coord = block_cell
        for val in map(
            lambda x: post[x],
            {(x coord // BLOCK SIZE * BLOCK SIZE + x val, y coord // BLOCK SIZE * BLOCK SIZE +
            y val)
             for x_val in range(BLOCK_SIZE) for y_val in range(BLOCK SIZE)} - {block cell}):
```

```
if val not in domain and val != 0:
                return False
            elif val != 0:
                domain.remove(val)
    # Check if any of filled cells in pre are changed
   return np.all(np.any((pre == post, pre == np.zeros((SIZE OF BOARD, SIZE OF BOARD))), axis=0))
def validDomains (domains: Dict[Tuple[int, int], Set[int]]) -> bool:
   Takes in a board before and after an algorithm has been applied and checks if the board
    is still an valid sudoku. Assumes that the pre algo board was valid.
   Takes in domains and checks if it's valid domain
   Arqs:
       domains: A dictionary with key: ALL CELLS val: domain set of cell
            True if new boards are valid, else False
    # Check if any cell has domain length 0
   if any(map(lambda x: not len(x), domains.values())):
        return False
    # Check if the constraining cells of any cell (with domain length one) has the same value
   for cell in ALL CELLS:
        if len(
            domains[cell]) == 1 and any(
            map(lambda x: domains[x] == set(domains[cell]),
                constrained variables(cell))):
            return False
   return True
def solved(domains: Dict[Tuple[int, int], Set[int]]) -> bool:
   Takes in a domain and checks if the board has been solved
       domains: A dictionary with key: ALL CELLS val: domain set of cell
   Returns:
            True if board was been solved, else False
   return all(map(lambda x: len(x) == 1, domains.values()))
def load_file(path: str = r"A2\sudoku_small.csv", n: int = 1) -> List["np.ndarray[np.int8]"]:
   Reads file at path and constructs board
   Args:
        path: location of the file with sudoku boards. The first row is the column titles. All
```

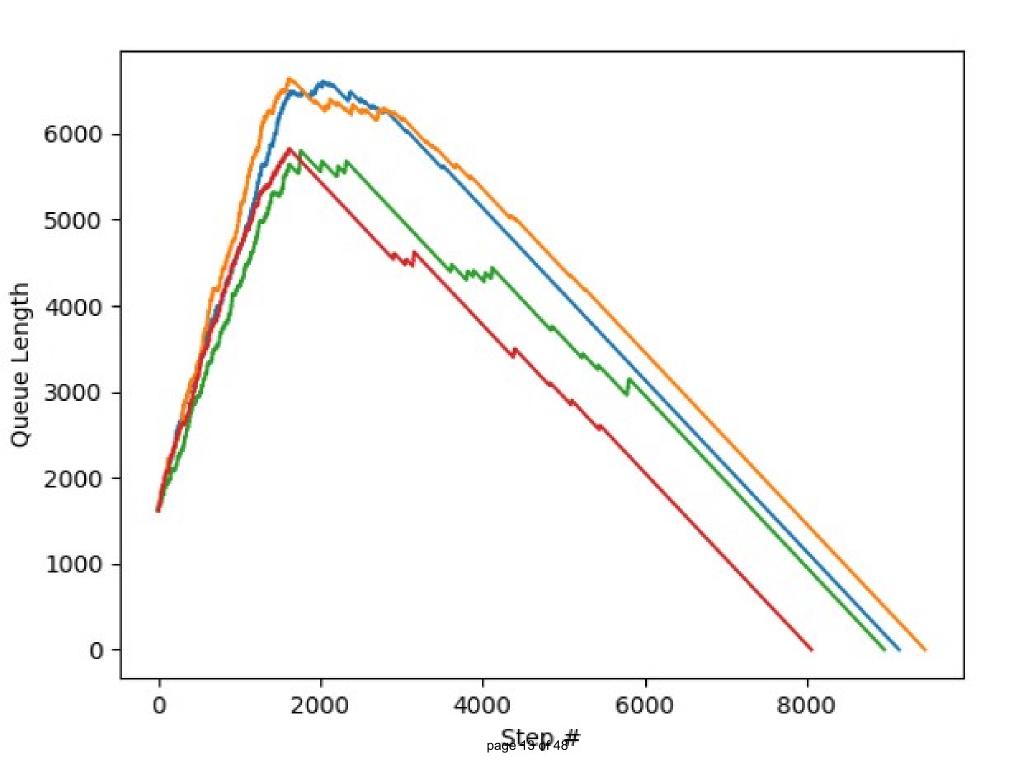
```
others of the
                form " 'partial sudoku', 'solved sudoku' " . A partial sudoku is 81 character
                string, containing
                intgers between 0 and 9 inclusive. The integer 0 implies that the cell is
                blank.
       n: integer number of how many boards to create
   Returns:
        boards: a list of boards
    fv = open(path, "r")
    = fv.readline()
   boards = []
   for i in range(n):
        ln = fv.readline()
        if "," in ln:
           partial, solved = ln.split(",")
        else:
           partial = ln.strip("\n")
        boards.append(np.reshape(np.asarray(list(partial), np.int8), (-1, SIZE OF BOARD)))
   return boards
def constrained variables(coord: Tuple[int, int]) -> Set[Tuple[int, int]]:
   When given coordinates for a cell, returns all of the coordinates of cells which constrain
   that cell
   Args:
        coord: A 2-tuple with integers between 0 and 8 inclusive, representing the coordinate
        of the cell
   Returns:
        A list of coordinates, which act as constraints for the coord cell,
        i.e. the coordinates of all of the cells in the same row, column, or block as the given
        cell coord
   x coord = coord[0]
   y coord = coord[1]
   variables = {
        (x coord, val) for val in range(SIZE OF BOARD)} | {
        (val, y coord) for val in range(SIZE OF BOARD)} | {
        (x_coord // BLOCK_SIZE * BLOCK_SIZE + x_val, y_coord // BLOCK_SIZE * BLOCK_SIZE + y_val)
        for x val in range(BLOCK SIZE) for y val in range(BLOCK SIZE)}
    # cell does not constrain itself
   return variables - {coord}
def create constraint set() -> Set[Tuple[Tuple[int, int], Tuple[int, int]]]:
   Generates initialized constraint set for blank sudoku board. A cell's value can not be same
   as the
```

```
value of any cell in it's row, column or block.
   Returns:
       constraints: a set of constraints. A constraint is a 2-tuple of cell coords. Constraint
        (Xi, Xj) implies that Xi != Xj.
   return set(chain(*map(lambda cell: {(cell, diff) for diff in constrained variables(cell)},
   ALL CELLS)))
def create_domain_set(board: "np.ndarray[np.int8]") -> Dict[Tuple[int, int], Set[int]]:
   Generates a domains from a board. If cell has a set value, it's domain is just that value,
   else the domain is all integers from 1 to 9 inclusive.
   Args:
       board: a board with either a value for each cell or 0 if it has no value
        domains: A dictionary with key: ALL CELLS val: domain set of cell
   return {cell: set(range(1, 10)) if not board[cell] else {board[cell]} for cell in ALL CELLS}
def AC3(constraints: Set[Tuple[int, int]],
        domains: Dict[Tuple[int, int],
                      Set[int]], returnQueueLength = False) -> Union[Union[Dict[Tuple[int, int],
                      Set[int]], bool],Tuple[Union[Dict[Tuple[int, int],Set[int]], bool],List[
                      int]]]:
    11 11 11
   Takes in a Constraint Satisfaction Problem (CSP) and makes it arc-constraint
   Args:
        constraints: a set of all relationship between variables. Constraint (x,y) \Rightarrow x \neq y
        domains: a dictionary with key: ALL CELLS val: domain set of cell
        returnQueueLength: if true, this function returns a list of the length of the queue at
        each step
   Returns:
        domains: A dictionary with key: ALL CELLS val: domain set of cell
        queue lengths: a list of the length of the queue at each step (if returnQueueLength ==
        True)
   queue = deque(constraints)
   qlen = []
   while queue:
        qlen.append(len(queue))
        Xi, Xj = queue.popleft()
        revised, domains = revise(Xi, Xj, domains)
        if revised:
            if not domains[Xi]:
                return False
            queue.extend(set((Xk, Xi) for Xk in constrained variables(Xi)))
   if returnQueueLength:
```

```
return domains, qlen
    else:
        return domains
def revise(Xi: Tuple[int, int],
           Xj: Tuple[int, int],
           domains: Dict[Tuple[int, int],
                         Set[int]]) -> Tuple[bool, Dict[Tuple[int, int],
                                                         Set[int]]:
    11 11 11
    Takes in an arc and makes it arc consistent
    Aras:
        Xi: variable's whose domain is to be adjusted
        Xj: variables's whose being checked against Xi
        domains: A dictionary with key: ALL CELLS val: domain set of cell
    Returns:
        revised: was Xi's domain changed
        domains: A dictionary with key: ALL CELLS val: domain set of cell
    revised = False
    removed = set()
    for val in domains[Xi]:
        if not (domains[Xj] - set([val])):
            revised = True
            removed.add(val)
    domains[Xi] -= removed
    return revised, domains
def select unassigned variable(domains: Dict[Tuple[int, int],
                      Set[int]])-> Tuple[int,int]:
    11 11 11
    Takes in domains and selects the domain with lowest number of options which hasn't be
    assigned
    Args:
        domains: a dictionary with key: ALL CELLS val: domain set of cell
    Returns:
        The coord of the domain with lowest number of options which hasn't be assigned
    return min(filter(lambda cell: len(domains[cell])>1, domains.keys()), key = lambda cell: len(
    domains[cell]))
def backtracking search (
        domains: Dict[Tuple[int, int],
                      Set[int]]):
    Takes in a sudoku Constraint Satisfaction Problem (CSP) and searches solution using
    backtracking,
    starting from the last arc-consistent step of an unsuccessful AC-3 attempt.
    Args:
```

return False

```
constraints: a set of all relationship between variables. Constraint (x,y) => x != y
        domains: a dictionary with key: ALL CELLS val: domain set of cell
   Returns:
       A solution to the board, else False.
   return backtracking search aux (select unassigned variable (domains), domains)
def backtracking search aux(currCell: Tuple[int, int], domains: Dict[Tuple[int, int], Set[int]]):
    11 11 11
   Recursive auxilary assist for backtracking search
   Args:
        currCell: a tuple containing coordinates of current cell we're working with
        constraints: a set of all relationship between variables. Constraint (x,y) => x != y
       domains: a dictionary with key: ALL CELLS val: domain set of cell
       board: array containing board values. If there are multiple values in the domain of a
       cell, value is 0.
   Returns:
       A solution domain as board, else False.
   if solved(domains):
        return domains
   for testVal in domains[currCell]:
        newDomains = deepcopy(domains)
        newDomains[currCell] = set([testVal])
        for cell in constrained variables(currCell):
            newDomains[cell] -= set([testVal])
        if validDomains (newDomains):
            ret = backtracking search aux(select unassigned variable(domains), newDomains)
            if ret:
                return ret
   else:
```



```
quizzes, solutions
761971265843436192587198657432257483916689734125713528694542916378
04010005010700396052000800000000017000906800803050620090060543600080700250097100,346179258187523
964529648371965832417472916835813754629798261543631485792254397186
600120384008459072000006005000264030070080006940003000310000050089700000502000190,695127384138459
672724836915851264739273981546946573821317692458489715263562348197
49720000010040000500001609862030004030090000001072600002005870000600004530097061,497258316186439
725253716498629381547375964182841572639962145873718623954534897261
005910308009403060027500100030000201000820007006007004000080000640150700890000420,465912378189473
562327568149738645291954821637216397854573284916642159783891736425
100005007380900000600000480820001075040760020069002001005039004000020100000046352,194685237382974
516657213489823491675541768923769352841215839764436527198978146352
009065430007000800600108020003090002501403960804000100030509007056080000070240090,289765431317924
856645138729763891542521473968894652173432519687956387214178246395
000000657702400100350006000500020009210300500047109008008760090900502030030018206,894231657762495
183351876942583624719219387564647159328128763495976542831435918276
50307019000000675004719060040003800095020030000010072000804001300001860086720005,563472198219386
754847195623472638519951247386638519472795864231324951867186723945
060720908084003001700100065900008000071060000002010034000200706030049800215000090,163725948584693
271729184365946358127371462589852917634498231756637549812215876493
389283596714129835476746912538835647921568329147317468295492751863
653865329174986243517257198346143756892612975438374812965598634721
004300000890200670700900050500008140070032060600001308001750900005040012980006005,254367891893215
674716984253532698147178432569649571328421753986365849712987126435\\
008070100120090054000003020604010089530780010009062300080040607007506000400800002,958274163123698
754746153928674315289532789416819462375285941637397526841461837592
376713642895397164528482795631156823947541236789679418253238957164
005710329000362800004000000100000980083900250006003100300106000409800007070029500,865714329917362
845234598761142657983783941256596283174358176492429835617671429538
200005300000073850000108904070009001651000040040200080300050000580760100410030096,268495317194673
852735128964872549631651387249943216785326951478589764123417832596
040800500080760092001005470056309000009001004320500010000200700700090030005008026, 947812563583764
192261935478156349287879621354324587619698253741712496835435178926
050083017000100400304005608000030009090824500006000070009000050007290086103607204,652483917978162
435314975628825736149791824563436519872269348751547291386183657294
700084005300701020080260401624109038803600010000000029000000001005790035400006,712984365346751
829589263471624179538853642917197538642978316254461825793235497186
06705001008430900000308004009000020500062179070009360030040000020007153500800076,967254318184379
562253186947691748235835621794742593681376415829428967153519832476
752637258194365124879712983465894567213423691587179845326586732941
206030000001065070047108050500000029008019406000420001000042800609300005070000013,256734198891265
374347198652514683729728519436963427581135942867689371245472856913
00450217810009003000080000460045000007090001280120350040000009350060807090300620,964532178187694
235235817964629451783573986412841273596416728359352169847798345621
140060800085010040907400250030070400209000307008900060000740010601305090700002600,142569873385217
946967438251536871429219654387478923165893746512621385794754192638
590000147000900008072000030700040290020030806800170050005764009036005000100800002,598326147314957
628672481935753648291421539876869172453285764319936215784147893562
```

```
100000090208970605000532000006050400700806002083700010604080120890600050015040007,157468293238971
645469532781926153478741896532583724916674385129892617354315249867
900084060604005207030070080760001500053000001000409603105026090002040000800003710,927384165684915
237531672489769231548453768921218459673175826394392147856846593712
30805600700690025301204000000000320904800000760109805000001904831000506040007030,398256417476918
253512743698185674329924835761763129845257361984831492576649587132
672492765138657834921924651387381972564813296745749583216265417893
00403002107000500938069000003000000602100450010907003000846700560001240008250030,954738621276415
389381692574837564912692183457415927863123846795569371248748259136
08320009620003070400791500040239000801000406006987000000400007500060280070050900,183247596295638
714647915832452396178718524369369871425921483657534769281876152943
803000270409008000700024096000006915001802000030750000054000060608100003372009140,863915274429678
351715324896287436915541892637936751482154283769698147523372569148
070490103003070590050000000000000061100749020024306008600980700012600000480007052,276495183843271
596951863247397528461168749325524316978635982714712654839489137652
830040096020010008904700030409002065308001070000603800507030020000506400002080100,831245796726319
548954768231419872365368451972275693814587134629193526487642987153
158543981672639874521415629783287315964924763815371548296856192347
050400680090100000008059302007203000000600208604080005036004190100007000072800050,751432689293168
574468759312587243961319675248624981735836524197145397826972816453
01009204700070060960004010000300000720008900840105070106400280480030000900017005,318692547254781
639697543128563974812721368954849125376176459283485236791932817465
078010609203009008410060052720106030000400700091305000932000400005720010000008006,578213649263549
178419867352724196835356482791891375264932651487685724913147938526
149341298765794153628815762394632984571178649253529371486463825917
00000184701000000059348006300020004076100500200006790040207069007800415003590000,632951847814672
953759348126391725684476189532285436791548217369927863415163594278
205040003001009000046001587004607090802000056090020340170008200000500800500903001,285746913731859
624946231587354687192812394756697125348179468235463512879528973461
103800000906400072000205090090070050084901300002506000210004005308700401070080600,123897546956413
872847265193691378254584921367732546918219634785368759421475182639
850420370003000010000170009000500602029304000010000438046090805005000900702840003,851429376973658
214264173589438517692629384751517962438346791825185236947792845163
0614900202800070500031080076007040310002500740906000000010008570000206800906000,761495823284367
159953128467625784931138259674497631582346512798579843216812976345
608900050000320190010000300400073600570260000003105020080000064020090507047008001,638917452754326
198219584376492873615571269843863145729185732964326491587947658231
000700900004300527010006084800094053040001200962080070100869000700020130059000000,538742916694318
527217956384871294653345671298962583471123869745786425139459137862
68090500000300050840210870339072080000000010045006900060804002001002075700013000,687935241913247
568452168793396721854278459316145386927569874132831692475724513689
600837001089004700102000400000450020030609005040000860908006070700098010005100930,654837291389214
756172965483896451327237689145541723869918346572723598614465172938
000067430800009150500003009007000010001806304940350020009010502608200700400708000,192567438873429
156564183279387942615251876394946351827739614582618295743425738961
0637004014000000070009130009207603000450026003500010050904082008701060900003000,963752481451368
972728491356892176534174539268635824197519647823387215649246983715
173723169458382675914514298367679413285148726539965834721237951846
008070600960001405402000010200830090600790103007004026500900307030020500000310089,158479632963281
```

```
475472563918215836794684792153397154826521948367839627541746315289
087200490060891000005000002400300500019002803000706200030050600500060017071403050, 187235496264891
735395674182426389571719542863853716249938157624542968317671423958
107008000650100000300060072060030250480009700001407009000000800003980015040203060,127398546654172
398398564172769831254482659731531427689916745823273986415845213967
00070401080362090701609000000100406598400002000030079034075000100900360250300040,925784613843621
957716593824372159486598467132461238579634875291187942365259316748
5000387010260048503000729400541003008904000000006000003000069000721400401390000,549638721726914
853318572946654187392892453617137269584273845169965721438481396275
600050000073008020854027000201700530400069007080000900027301084060540009300000001,612453798973618
425854927163291784536435269817786135942527391684168542379349876251
000900406701040002009501378012300009300004080085000230050007000093008600020600541,538972416761843
952249561378412385769376294185985716234654127893193458627827639541
00750090400008230500160000280003607001600420043019005054000800002907103000000609,287513964964782
315351649782895236471716854293432197856543968127629471538178325649
001040730630900004075000200000000501069001000004002079980500602710609300000203080,291845736638927
507108002000043100900500006070050004100002069600700380320490000001006400009070528,537168942286943
157914527836873659214145832769692714385328495671751286493469371528
807000000610005430400690000002800709003007820900051046000009670054000000200403018,827314965619785
432435692187142836759563947821978251346381529674754168293296473518
040000200710930000058020760300060000406800920020705800031070090007058601500100007,643587219712936
458958421763385269174476813925129745836831674592297358641564192387
002834700010060005798200400903050100000009007080072060600081024051000300040000090,562834719314967
285798215436973658142126349857485172963639781524251496378847523691
431800006000300010000006205609134070020000040000570089003659020500080104807000003,431825796256397
418978416235689134572725968341314572689143659827592783164867241953
020000106610239040050004007003520009009400080800701400795006002200180000400000653,324857196617239
548958614327143528769579463281862791435795346812236185974481972653
003000150620700009051000007180670003509003400030080201000207904000098620004510008,743869152628751
349951342867182674593579123486436985271865237914317498625294516738
40005327002060080300890401014520000600004830000001090601300450000070900780000060,416853279529617
843378924615145239786967548321832761594691382457254176938783495162
004030009520001300019860200402000700037006800608510020900080070073002046000000130,784235619526971
384319864257452398761137426895698517423941683572873152946265749138
397679314258958746123237591684146823579582439716764185932391672845
031020060005074003006800020700406038000095706200780901098140000500000890300000002,831529467925674
183476831529759416238183295746264783951698142375512367894347958612
015040002020560098300010007200000600940001000030680704458000000090872050600430900,815947362724563
198369218547287354619946721835531689724458196273193872456672435981
604302001780006300900510400003004078028000096000601004090057800000020015000403700,654372981781946
352932518467163294578428735196579681234296157843347829615815463729
000048010943050700008200006050000379002400080070013040600590002109087500530060000,265748913943651
728718239456451826379392475681876913245687594132129387564534162897
900003050246050700070680100000008039501200800700006001809420006002010078030000240,918743652246951
783375682194624178539591234867783596421859427316462315978137869245
002078000006015908905000100400709500030054070000061204000020306008000009710800450,142978635376415
928985632147421789563639254871857361294594127386268543719713896452
043020000050180070890506100400009706031000059000871000070005460002043501000600320,143927685256184
973897536142428359716731462859965871234379215468682743591514698327
206597403080103000507000009000004210028006500409010060700305000001200000300480902,216597483984123
756537648129673954218128736594459812367792365841841279635365481972
```

```
27060005000007040600605903004000560008100004002900617339000002000097800807140005,278634951935271
486416859237743915628681723549529486173394568712152397864867142395
010907030002100004958002000600030002073060580000705069080000406304000105009210800,416957238732186
954958342617695831742273469581841725369187593426324678195569214873
290041000470302050000060208039400005100000070504100603613200704000003080005900100,298541367476382
951351769248739426815162835479584197623613258794947613582825974136
080623090400007000900000713006910400805000026014500007030708000500000009021460085,187623594453197
862962845713376912458895374126214586937639758241548231679721469385
921827169435941528763538746192672391548483617259765982314219435876
000457602940061300070000080100509400700086930020003007400010059006000800218300700,381457692942861
375675932184163579428754286931829143567437618259596724813218395746
00072004100305189007000000073020016000410930520508000980000006090007200560904003,958723641423651
897176498532739245168684179325215386479847532916391867254562914783
000230050673400800005007900310780000064009200082546009008000103000801700000600405,941238657673495
821825167934319782546564319278782546319258974163436851792197623485
980046025000090700700300004008023010045070008000105006014800900506000307090002600,983746125451298
763762351894678423519145679238239185476314867952526914387897532641
200000001003060008807031940002506070409800056100000380038670500705090263000004000,294785631513469
728867231945382516479479823156156947382938672514745198263621354897
0042060500700003060000751200026087108900000400470900000000590056002000009307208,184236957275419
386963875124532648719891723645647591832728164593356982471419357268
090604025000500904503700100002059001010000000006008437080003600400020000700000058,197684325628531
974543792186372459861814367592956218437285173649469825713731946258
000750600061980004400000720259006000803000010000820075090208000010060490007340058,932754681761982
534485631729259176843873495216146823975594218367318567492627349158
600000045200009803089007000001402309790300050000050080076030400520000700004086012,617823945245619
873389547621851472369792368154463951287176235498528194736934786512
020980040030047601019006080700490000800023907000605000904800006001000300350014020,627981543538247
691419356782763498215845123967192675438974832156281569374356714829
008060700030870012000205930000700504905004000802903070106000080009120360700000250,298361745534879
612617245938361782594975614823842953176126537489459128367783496251
600300000502809070013050002700240085004007126009508000305000400170400003008090607,687321549542869
371913754862731246985854937126269518734395672418176485293428193657
610030004005008703040906020009200400000403680002015070700001500003680200090070031,618732954925148
763347956128839267415571493682462815379784321596153689247296574831
00208050005837010070000603900590270000000026403041000008720160590104008000090020,392184576658379
142714526839845962713179853264236417958487231695921645387563798421
006037508700010900130050020002908000050020430600000090200005704003100060498600000,926437518785216
943134859627342968175859721436617543892261395784573184269498672351
00060210800000009080001400030000009108006004003250100000000000040050005000204,354692178721483
569689751423537169842912874635468325917243518796896247351175936284
300709000720560019000000000000001020081000000000305000608100000050080071000203500,381729654724568
319596431827937814265815692743462375198648157932253986471179243586
3000000000000900600961040000000084000043017000000900700068003008001000105900800,346827591851439
276279615438567192384982543617413786925794268153628351749135974862
005800004600100300001009806000905010000004700074000009007013900010000600000460000,725836194698142
375341759826836975412159624783274381569567213948412598637983467251
60074000002000000780020150810070020000010003000000700000000000040001260376280004,651749382923158
476784623159819374625467512893235896741192467538548931267376285914
00010350000005001000097002000900076005800090006020010000270000000039000005001378,284163597697852
413531974826129385764758416932463297185312748659876539241945621378
00000100060000300000940000607009800040037600000000050000700804801034070900800160,735961248614283
```

```
795289457316176598432452376981398142657563719824821634579947825163
000036090008000000000091800035100000064000520809040010000009054040680000000450060,417836295698524
371253791846735162489164978523829345617386219754541687932972453168
00700900056000010030400000040000950070000000600001003000400009750600004008930701,817529346562348
197394176285241763958973854612685291473136487529759612834428935761
002009008900014000040800050005000000099000270070009001400000009500000006000107002, 312759648958614
327647823951265471893194382765783596214876245139521938476439167582
00005100964000000001004670170000005408090000056000020000200107017000054005000090,732651849649872
531581934672173426985428593716956718423394285167817369254265147398
0800042000405000903500690800900320400204050300000000000000000000067030890000,986314275741528
396352769481195632748628475139473981652864157923519243867237896514
0410007508000900030070000014080000000200000097100300000009200100043508080027030,941382756856791
423237465981498216375623578149715934862364859217172643598589127634
000964000060008000900300000000187049000000870036109600805937000010000004600001,123964758567128
493948357612236591874491782365875436129612845937789213546354679281
108003090000000460070501000000000040570009010090004005000060000810000800035007,168423795953187
246427956138789364512342571689516298374235749861674812953891635427
010004050037001000400300901900000070000400005200090300000102587000030000000000204,619284753537961
428428357961964513872873426195251798346396142587742835619185679234
6010007008400970500590000030000006000014500900003000005000001004010600000360400,621453798843297
156759681243517928364236145879498736512365874921984512637172369485
346943267518439651827627893154815724639196572483258349761374186295
30000417004000900270000280000800172003080006067002041000000000900030040100000000,392684175845719
632716352894458961723231847569679523418523476981987135246164298357
3005028400020060010063000000000000000601000009000200050060000005400031908000008463,397512846542896
371186347592924185637651473289738269154863924715475631928219758463
140370000300506000000042000700000480050027103430080060000030000000700206054300,145379826382516
974967842531729631485658427193431985267874193652513268749296754318
000005600000000570907400000040010000090800040010702827000049000000806800006010,327815649148629
357695743281589462173712938564463157928276381495951274836834596712
217671235894718924536259673481346158972183742659467589123925361748
70020000680940620020400000535069000000300070090004000000009000000048002008060,715283496839456
217264179385351697824428315679697824153586741932173962548942538761
985819547623971682534432795816586431279198254367367918452245376198
0000080070017400000000901080070009200030010000900060809000800000000039060310200,429168357851743
692376592148647835921283971465195426783934287516712654839568319274
7905010420100860900080076000041007080000000000020004061079000000100000020000000405,796531842213486
597548297613954162738681973254327854961479325186165748329832619475
670500000005007008400060030000054006050730090000800004007003105006000003000900000,673528419915347
628428169537139254786854736291762891354297683145586412973341975862
0069007001200084008000020050000950100608000090100060000000500700040000900000820,356914782127538
496894762135278395614463871259519426378632189547785243961941657823
0523000010080409300609008000004120000000000010460809200000000003080006100400,952386741718245
936463971825639412578825739164174658392597864213241593687386127459
0000890000030000000800002304380027008006003190170000600023700003704008000000000,326489715475312
698198675423643851279782964531951723846869237154537146982214598367
6008200100320190500050309000010000300690000800000800000001000076002100020000067,697825314432719
856815436972281964735769253481543187629958671243376542198124398567
0700004006005320005000000081002006704070000000028040000000080380160020002000040,273981465684532
719519467328138259674457316982962874531746125893891643257325798146
```

```
0000000032006001505400030060150800003000148000000200050000000046000007000200806,169835274328764
915754129368691548732235671489487392651572486193846913527913257846
0000000609401000700136000006049030000005000070040000290037002030419000000200,257349168946128
375813675924624983751198752643735461892481296537562837419379514286
695000002020050000000080030004000806000000000108900454005000000006100050010094,695173482823954
761147682539974325816538461927216897345461539278789246153352718694
00010004008070030000300500003726000510650803080030001000000604000042100000800000,562139748984726
351713485962437261895126598437895374216271953684358642179649817523
10507004000003000640368000000700001005020700000000032000000500721000000004060008,165972843872134
956493685127247398615356217489918546732689423571721859364534761298
753923517486239768514758194632146325879692871345815436927374952168
0340000067020409506002003000900300005034900000000000000700005040970103060002070,834519726712643
958659287341498736512523491687176825439387164295245978163961352874
20007400374002060900500000000001040000420300000160000000030002307090010006701000,269874153743125
689185369247632918475874253961591647328418536792357492816926781534
010608007000400003000000000000000000000000130200290406800807209603000000040009000,413698527895427
613726513984581236749964781352372954168158372496639845271247169835
0830409000000030040083060190008200786010000002700046000030001000000700001009000,683241975512796
384479835621934682157865174293127953468248367519396518742751429836
000000007000000800730095207800000030020400900003704000003078000825009030006200,849251367526374
981173689524784962153352148796961537842295413678617825439438796215
00000000060000080300354001002000090500005000000001062860000400030080009490030506,719368254654712
893283549617321876945946253178578491362867925431135684729492137586
0080000109010702430300090703000000008002009000004700102080000007205400000090000,478362519961578
243235149876319857624784621395526934781152483967697215438843796152
100900520000060000028500100079000000581000070600000080907600000010050000004082000,136978524495261
738728534196279845613581326479643197285957613842812459367364782951
458149875362291687534867354291435921687374519826958762143612438975
7500009800000000209000000406000945000000001040008006005004000490260100000870200,751642983634981
527982357614863719452527436891149528736275194368498263175316875249
04100002000000139000000009347000040003200002798001000972000000008960100000308,941853627875264
139236197854593471286418632795627985413389726541754318962162549378
00005000000002017590000000070001009001004000800030200030400080080070530509080002,213756498468329
175957148623375261849621894357894537261732415986186972534549683712
351539714286375491862248653179196872543613547928952386417487129635
500300700701205634400000005000700000000802000020016070067580010000673000000000000,596348721781295
634432167985158739246674852193923416578267584319819673452345921867
200000570065000000049200030000000010020000970007000000501600003060000094002105,281639574365847
912749215836478953261532186497916724358827591643153468729694372185
00000100263024000009000004000800000900907603047080002006003000000019078000000000,784961352631245
987295387146358124769129576834476893521962738415543619278817452693
0700004020064090030025060000580006006000000700000900057200630000000580000000047,579381462186429
753342576981258137694693254178417698235724863519931745826865912347
0300020460000000090500080000090370000407000000620008000070050000230007290050600,731982546428365
719965741823612598374389417265574623198843176952156239487297854631
924924837516618275493592364187347189265239758641485621739761493852
00008005000000078600070640300010060008100700043500810000000007003000520702001830,176384259349512
```

```
786258796413927135648681247395435968172514823967863479521792651834
00050807600517003000000000401000040000005000070030060800054009007600000604800700,123548976945176
832786392514519267483362485197478931265831754629257619348694823751
00001860005300200040070020800006000200020051000600003000014000000000004002306105,279418653853692
741461753298534961872798234516126587439685149327317825964942376185
3070000050509406000000000000000000000000056102040000309000070010296000004310,397268145158947
632246135879782451963934786521561329487813692754475813296629574318
000005020400000100000030087000004302000806075005000000306008000070310000000060403,831975624457682
139962431587689754312143826975725193846396248751574319268218567493
03006000005000017080900000010600000050006000970512000000005002007306003025790,731569482456283
179829714563318642957245978631697351248974136825582497316163825794
649498615372347982156629571834815436297534869721782143965961257483
3900000000518070000400392004020700000000029002030401040100000580400000079000000,397542168265189
743814763925148297356753618294926354817431976582582431679679825431
00000603909800000500020000060050004003007806000004070800003000900500000270040008, 152876439698431
725347295681769358214423917856581624973814763592936582147275149368
200001003000000420090080700005300094010050000007000200030008900900007810000100007,276941583158763
429493285761825376194619452378347819256731628945964537812582194637
00000067000100000000000540005000480000007200804002030057084310040075008380106000,438259671571463
892692718543725631489913847265864592137257984316146375928389126754
000000030100205000506190000000100236000010000000009870000600006087925205106700,629875413718324
596453619287987541362362798154541263879874952631136487925295136748
0100300000047002907094020530000000093060000000200400000050700006300010025000400,218935674354786
291769412853641573928937628145582194367493251786876349512125867439
600300054001000708007905000000045003000100000000640005000801700346000080000000,698371254531642
798247985163769824531384519672125736489456298317913467825872153946
500000040030078020000030000400002070020000500000905004890020007053004608004000030,581269743639478
125742531896415682379928347561367915284896123457253794618174856932
0180030079607000200000086000070000009000500660500921000002005100008600000000900,518263497963754
128724198635387612549291345786645879213436927851159486372872531964
209680000007400050100000600050908041080600700000000040090020000200000987000400,279685341836741
925514239768625197834198463572743528619451976283362854197987312456
0400000005008700308003006000006800043071080000200005000014360000000030005076040,643521987259687
413187439562591268374436715829872394156728143695964852731315976248
0048003008010030000306200000050702400400000180060000756000000000302080000400002,294817356861593
724537624891985176243742935618316248975628751439459362187173489562
010890200080001030500000100039260000200003600008040000901036000300902050000400000,713895246482671
539596324187139268475247153698658749312971536824364982751825417963
001005008070009060000000000709080000800010705006090000057020600020001050000003809,691275348273849
561485136972749582136832614795516397284957428613328961457164753829
0049000000010700300600010740000603010972340600740000100000000200079004000380002,714938625592167
843836542197425816739189723456367495281643251978258679314971384562
000012079016005000000003050050000008600300000000506002600093009000700300780002,538412679916375
284427968315195246837864537921273891546782654193649123758351789462
80700049000000000940008506006000700000105608530900100600000040017600000000000,827653491165497
283943218576216384759794125638538976142679532814481769325352841967
0000700400502040002008060011600050000020178000000000000000300043700058600053000,386571942751294
683294836571169485237432617895875329416527148369943762158618953724
000280000000600700800146021030060000604003000280910060000000030040001701000800,674283195312965
478985714632193576284567428319428391756856132947239847561741659823
000300010009000004001000200800500000105008073700430980000100000200800531000000820,452389716689217
354371645298893576142145928673726431985938152467267894531514763829
```

```
002000600580300000100000020008701060000000092130800000500000900002708000697500,342179685586324
971179865324498751263657243819213986457725438196964512738831697542
3084900000510000020000000600000000102430009000080540000006000301000000600000548,368492157451673
982297581364586947231724316895139825476945268713813754629672139548
980600000000800323120007000009060020040010900000020001008003000060010090004807,987623541456781
932312945786135892674268437159749156328621578493874369215593214867
0790320860000060300030940003000000690856002009002008507000000050800000000000002,179532486254786
931863194725327458169485619273916273854742965318598321647631847592
000000026000000104000020050020607000000008240004001003402070605016000080708400000,149785326285963
174673124859321647598567398241894251763432879615916532487758416932
30048009000000000401000003040090201809003005000500069020960050005200000030000006,357486192682319
574491752683546897231819623745273541869124968357765234918938175426
9020307000000142001076000000040005600000104000500017050130942000600001000000005,942538761658714
239137692584219473856763851942485926173571369428896245317324187695
70000800906020370000060000000246008034000790000805902402000000509070000000082000,734518269165293
748289674531952461387341827956678359124427136895893745612516982473
00089000040000106003000002702390000000023700010000400000430900006040700008000003,762893145459721
368831456927623918574945237816187564239274389651396145782518672493
0001050005000060800209006000600090000900020028030000000008003800071006000500009,976185342534726
981128943657465219738319857264287364195752698413893471526641532879
9500008030000000010640090000308005000050006008601300000080009000190064000507100,952716843437829
651186435927629348715713952486548671392361284579875193264294567138
0000780900104008200000000000001060000020000080486037000000706000003000002048900100,254378691617459
823839612475971865234325194786486237519192746358763581942548923167
0000000000503204007000030000720090303000960002670000000105600000040510060300000,613475892895632
741274198365157264983438519627926783154741856239382947516569321478
9040000851000600002604051000000099130006200000903410206000000000030800000500309,974213685135768
294268495137426859713351627948897341526683972451549136872712584369
0100920060000080006900008400002100690700000000000070000300018002009430000804027,318492576427658
193695731842584217369976543281231986754749325618862179435153864927
006000200800006510000013700000061400103820000008005001720000060041000007005000000,516789234837246
519294513786952361478173824695468975321729458163341692857685137942
0010070950509032000308000700020000509000003000000008000010040703200000010308000,861427395457963
281239851674382196457976584132145732968528619743793245816614378529
0028000005080400000300068100000003210070000060050200000010307000027540000000080,762819534518342
697439756812846597321127438956395621748654183279981275463273964185
060087000080000000000600039003018007000030006400009080700005600010000090000900105,964387512385291
764271654839693418257158732946427569381739145628512876493846923175
0030000007080000400009010070030500000100000004028905008000007010930500052400300,293514786175863
294846792153729345861581679432364128975938251647417936528652487319
000000005000040300000005260000900080860000100209006450900500040000024601002060000,421638975695247
318783195264354912786867453129219786453936571842578324691142869537
897467891532851679423724583916693412758176354289538927164942168375
00700009003001000080002000020000080000006201180072053000050600300008000502361800,627843195439615
728851927364275139486943586271186472953718254639364798512592361847
0003860000000060405029000000063100000902000260540000083059006005000403040000089,427386951398175
624156294837579863142834912765261547398783459216915628473642731589
30040001000807000000030040600058060070060010000000070000090003645000090010000700,359468217468271
935271359486134587629792634158586912374827196543645723891913845762
40900000000100000500000000000000060040900705810080000070800640000102800900075902100,419586732327194
658568273491751368249934725816286419375893641527142857963675932184
40850010002000000700090804690000010012946000000010000600000870002400000800076,468527193923184
```

```
567751693824694738215512946738387251649136475982879362451245819376
00008003920500701000301078000089000409000070402000000480000070000000500004200,174286539285937
416963415782357891624896542371412763895648329157721658943539174268
60008000130070002000000830000500013030000076000301400060000507000020040084015000,629483751318759
624475162839847596213531248976296371485162834597953627148784915362
00005000800079040050720030000001003008070040000040000309000050040900027100005800,914653278263798
415587214396492561783658372941731849562329187654845936127176425839
4000580028900060510000009000104006900020050070806090055000720006008000000000000,471958362893246
751256713984315427698962185437784639125549372816627891543138564279
400080019730045800020310000008000070000000290002000004080000740007000100003100082,465782319731945
826829316457358429671674531298912678534186293745297854163543167982
00200084030901006040056000100410600010020008090003400050004130000060300000050000,612379845359418
267478562931234186759167295483985734126596841372741623598823957614
090008046065140280008500109000050000081020000356000002009080000040010000003000460,192738546765149
283438562179274651938981327654356894712519486327647213895823975461
70000246000000000203000005004107080080300004006503000100002030000000006010008700,789512463154763
982632489157241976835873251649965834271497625318328147596516398724
01002980004003009200000100300500702000040007037019000550000000090003000032004000,613729854748536
192259841763485367921921485376376192485564918237197253648832674519
09680003002000460030000000870593000006040507900000000224008356000300000600000000,496821735528374
691371596248715932486862415379934768152249183567183657924657249813
02000000300040000580000020000320100640080000005000040000706020060002037100050068,924578613631429
785857163294793241856416895372285637149349786521568912437172354968
09170420000290000050000300020060019000700060000600952004009000000100003609005000,391754286462981
375578263419254637198917528634836419527143896752785142963629375841
30000008000003001000000079000005000100604000040801006034057100090400050080000760,317946582952783
641468512379826395417179624835543871926634257198791468253285139764
604800200300020801000009700087090100900003070000000000007006000030480001608000,674813259395724
861128569734487396125962185347513472698839247516756931482241658973
000107000085000000000006000900000200051090007604005001000070086000002040100450070,426187539785239
614319546728978614253251893467634725891542971386897362145163458972
0290000080052080100000000000000080002000004000007003500500400809001802050930075100,329517648765248
913814369275153786492286954731497123586572431869641892357938675124
0040050899003010000000004000000015601000020800000040000200000402980005008056000,164725389987341
562523698471249837156715469238836512947651274893472983615398156724
090040000006008020840910000030004280200000790004000000600020000000036709601000,593247618176358
429842916573637194285215863794984725361361482957428579136759631842
05009010600050008000006900500000017000004800000810090020700400060100000900040020,852397146649521
783713486952584963217196274835237815694321759468468132579975648321
000900020509007000000860000056001900200700051000080070100040065060000240002000097,673914528589327
614421865739756431982238796451914582376197243865865179243342658197
10070000023709100889000500600000000000000005826905000160000000023000000800,165748932237691
458894325176942167385658934217371582694583216749416879523729453861
0000070001093000000800000006180003003000240070000096002410060000003207000009080,456987123179325
846283416579561894732938762451742531968324178695895643217617259384
897768249153185792634246835971397614582953421768624578319871963245
103070020090000800000100094000300709048001000200006400000008076000030000610000000,183479625492563
817756182394561324789948751263237896451324918576879635142615247938
005090004004200000000010000002000407007009080800005029041050002000000000090073100,625398714134267
598789514236962831457457629381813745629341956872576182943298473165
00019000007050064045300000000007250000006007100000003700001000060000309000040002,826194735971523
648453768921689317254532486197147952863795231486264875319318649572
```

```
0100062000003007007000903600000200000017003000500720040050000790004100032600000,913476258864235
971275189436357842619426917583189563724641758392798324165532691847
074300060600050087290000300500030000000000020006400970000002600003070000050000000,874321569631954
287295786314519237846748695123326418975987542631163879452452163798
003071000000024070170090800000007800610000030020060008000000300010040009000002,243871569598624
371176395824935142786461758293782936415814263957327519648659487132
6800005020000100000002069700500020009000480000145002087204510000000000509700000,683974512297315
846145286973856132497972648351314597268728451639431869725569723184
000009760000201049900700002720940003410007090006003000040000301000000070060000080,132489765675231
849984765132728946513413527698596813427249678351851394276367152984
9000600004385906000008000040074005000000300000100760000030000056780000304000900,972164385438597
621165823794627418539849235167513976248791342856256789413384651972
50400070103900000000000020090901000000046030000020006000600003250000017001006420,524693781839517
246167842539692135874715468392348279165486721953253984617971356428
07000201800008650000905060000067000504009500700620019000000080000020001427000000,675432918314986
572289157634893671425142395867756248193531764289968523741427819356
00090360040000103000260010506510000900000000080040000008254001000069020300000000,157923684486571
932932648175765132849294786513813495267678254391541369728329817456
9004006350000000404073600000000000520020900000300076002900001607000500000001400,981472635236159
847457368129648713952712596384593284761329847516174635298865921473
00000560290000100300030470076000000000000000090310600200900000013400000407003000,374895612982671
543156324798769248351245137869831569427598716234613482975427953186
0400000030000080920000038008600000000900200005304000006300057020089640095060000,948215763631478
592572693814864931275719852436253746189186324957327589641495167328
07120000000001042002096000590070000020004000034009000009052070006007034000040000,471235968965781
342382496715598173426127864593634529187849352671256917834713648259
510090002070530900300002000708005030432008001050000008000000000004050000009040,516894372274531
986389762415798615234432978651651423798945386127823147569167259843
396736495218861249573347518962295736841978364125613952487452871639
0000700005000096300080030400560000090000004240700900780020000090400050020000090,439671528572849
631168253749856394172917562384243718965785926413391487256624135897
4000058000731002050506000410000034000050000308000000004002760302006080007800503,419235876673148
295258679341926583417745921638831467952584312769392756184167894523
500000810010068935000040000000000106000003008000080070037006400050007063060100000,576329814412768
935893541627385472196729613548641985372937256481154897263268134759
42000000780900100507020093074000900300000300000040720012005400000000000000900800,425398167839761
245176254938741529683268173594593846721312685479987412356654937812
158821765493169482537253671984784593612578926341412358769936147825
90003000000400591601000004004004000200100003056300020100209000640000650000000900703,945231867823476
591671895324754169238192783456368524179289317645437658912516942783
00700000558010204034000081007000000000005000010208000068037100400000072000500060,197483625586192
743342756819675349281823615497914278536268937154459861372731524968
000000006360000210009000700000001057470030009003090400090700003002005040010000600,251473896367958
214849162735926841357475236189183597462698714523732685941514329678
00106000000007000000100005006070800080020400043850210034000680100004000050300000,371568924425937
168698142375216473859589621437743859216934715682167284593852396741
005020060406000028000000500804200700001500000070968000510700000002641000000080000,785429163436157
928129836547854213796961574382273968451518792634392641875647385219
0004601500002003006000850002068040300000006008001240000005000000007080700000604,927463158845291
376631785249296874531174539862583612497418956723362147985759328614
0000000050098010008002004001000500000640052700006700000050014005841296000002800,923174658574986
```

```
132681523749817295463396418527452367981268759314735841296149632875
000208051001069000006000000003210848000400000009000360000052900000000014500000,497238651581769
432326154897765321984839647215142895763678413529253976148914582376
30620070007090480200070000000800000400002009050000006080000300620480000905000020,346218795571964
832298735614162897543437652189859143276784529361623481957915376428
5100030090000000000000000000000006400000930201000410038380600500265000000009040800,516823749798164
325423795186831256497647938251952417638384679512265381974179542863
60000870003050010000800006400040000001050000420700600700802000800031407010000000,642198735937564
182158327964586419273371256849429783651793842516865931427214675398
001000800020800000960040002000000008009000030632000910013054690045060020000030000,351672849427819
563968543172174396258589421736632785914813254697745968321296137485
002010000890030000007890000750000000401000700020050104014920300080000010009040802,632415987895732
641147896523753164298461289735928357164514928376286573419379641852
000670001000890200000001000009160000006008000201300008003900120900700430040000060,834672591715893
246692451783489167352376528914251349678563984127928716435147235869
8000940700001000000057006051060000007000000060300008600003004040000800001009035,856294173794136
582132578469518642397327985641469317258675823914943751826281469735
780025006120004007000780500030070008000000420000000004050000070200010003600074,789125436125364
897346789521932476158867591342451832769214957683678243915593618274
00000108000069000000005000000000000080260090060048070246700019078010260001000800,752431986834692
751619875324427159638183267495965348172246783519578914263391526847
000041965008350704000000000150000088000000600700040030900000500009001004005003,732841965698352
714451976832915264378843597126267183459329618547576439281184725693
000800000020004370500000002081070000307000015002406000000560034000000800000140000,473821596126954
378598637142681375429347289615952416783719568234264793851835142967
263392765184631572948985143726247896351829651437756439812413287695
20780600010000089000300570007032000800510032000000090000800051000200000000700060,297846135154273
896863915742471329658985167324326458971748632519632591487519784263
000702801070005390000007600061530000010000050009000000021500602000180900600000,369742851174865
392258319764796153428481276935523498617837921546642537189915684273
00400000002000405000084210050600000000020950800900700700010000201090870040000006,184572639372169
485695384217957648321416723958823951764739816542261495873548237196
04002053600009000020000307176000010000007000000000460019004023470600010002000000,947821536136795
248258463971763248195594176382821359467619584723475632819382917654
00030000020900000053000007090001080006000370000780009200000200981006000006085020{,}681379254279458
163534621978923517846468293715157846392745132689812964537396785421
0850004001206000006070000000080360000000000000007150800000200200370060410005730,385719426124638
597697524381541893672768152943932467158873946215259371864416285739
0100000080351040000902803500004000020015000000000304900000000006050000200800003,612395748835174
629794286351973468512461529837528731496347612985186953274259847163
370000000009600000001070390007000000905000000020900400040590230600007009000246005,374859621289613
574561472398437168952915724863826935417748591236652387149193246785
305001000040500000700000000603900000000080031580030000000017809000360560400008,385761942946582
731712349856623974185497158623158623479234896517879215364561437298
196951624378897365214632418759514972683249753861765841932183296547
20015009461000030000500006000940000000380010000050000004000040002035001968002,238156794614297
358795834261589471623462389517173625849927543186846712935351968472
05006007070319000440005801008400000301000060000000000000100000035498305004100,851463279763192
854492758316684571923217349685539826741948617532176235498325984167
00070000090001080046200000060904008000000120031000009017002340000049700000000000,581769342937214
865462538971629345187745981236318672594176823459253497618894156723
```

```
02190000780905000074500090000701800000050000805040001000072980000000320000000074,621934587839257
146745681923267318459194572638358496712413729865576843291982165374
0062000504300060010080900640000000804000002301000040008030000000150000000840502,176234859439586
271258791364693425718547918623812673495985362147324157986761849532
214439712856951687423386245791247193568712456389563978142894321675
1500870060000500100060000000000140070200000000902008000000190800900207000046800,153487926497652
318286139745368591472712864539549723681625378194834915267971246853
46000000070080950000000008300006105000005004000940070000501006900008700500300800,468253917731869
542259417368324786195697135284185942673872591436943628751516374829
0720400001000000000850073000007030400000021003006000700300005200060010805700640,372648159159237
486468591732521879364687453921943126578716384295234965817895712643
56003007804058001000009000030400006700000000100000050050104093001006005907003000,569431278743582
619812697534384215967275369481196748352658124793431976825927853146
000000100104080007500090843000500070000090000800400040060005036005001000700860,498573612613428
579752619384384956127265147938179832456847361295936285741521794863
001300000624900000000025001010802400800000000040010050060409000509003000002000009,751348296624971
835398625741915832467876594312243716958167489523589263174432157689
273721638594568793142213546789497281365172369458945872631836415927
900003001000007690000006003000700405005010900027030000056000047000000100000205000,964853721538127
694712946583691782435385614972427539816856391247273468159149275368
59030600800849000000600010000400803010900000003050000000800001020000400003004500,591376248278491
365346285197754918632189632754632547819467853921825169473913724586
00000030030408107010000006400109608060810400007003000080000900000700690500040000,785462319364981
275129357864431296587658174932972538146817629453243715698596843721
01005030005000000008093400000002700100000309000800072007001008000900005000802900,417258369953761
248286934157695427831742183596138695724374519682829376415561842973
0000004000000702100060000707006080303000000980904201030000008062010000000700900,687231495943587
621521694387274169853136875249859342716395426178762918534418753962
90307000000000320020400009109000700065900003030000060001604297000007000002305600,913276485487519
326526438179149863752765942813238751964351684297694127538872395641
00000026920400500009000000000630900003702400800070005000003000540000700300001890,758143269264985
731193276584816359472537624918942718356679832145481597623325461897
80000005705030001000000980409016040000009500300007000090800000043006005000014060,839641257754382
916612759834597163428481295673326478591968537142143926785275814369
00000000415000709600708010500049003700000050000307080003000090000038000070504000,392156784158247
396647389125285491637764823519913675842431762958526938471879514263
0805300165000017040604000088520000000007020070030840102000300010000000040000000,487532916539861
724261497538852914367314675289796328451628743195175289643943156872
90000500770000100302809000009580206000000930820001007003070009000700000600000000,913465287756281
943428397615395872461671549328284613579132756894547928136869134752
00401605000090070000000002008150900269500000000000070009000601576000040200000000,924716853358924
716167835429781549362695372184432681975849257631576193248213468597
0080060102000500001009800000000080700007002630000090000020070620097358500060001,748236519269751
483153984762912645837485379126376812945891523674624197358537468291
0000000100900065006400000920000000600020870080067102905000000100800000206005104,527984613398126
547641753892712549386469238751835671429953417268174862935286395174
0350000096010000007900600003806000970009100040000086005490000000005400060000003,435821769621479
538798563241384652197256917384917348625549136872873295416162784953
1020050000070000000903700060087000050000981000000000000000001030002680006500700,162485973387926
514594371826628713495453298167971654238249867351735142689816539742
00100000080523004024000700090040300000790000041300000050791004102008700000500003,631854972875239
```

```
641249167358926483517587912436413675829358791264162348795794526183
30000060000080000790040031089400010000500006400000083080090000009680700760013000,341957628526831
497978426315894365172235178964617249583183794256459682731762513849
7040030900000018060008040009000750400000100003050090080010000001350000900400060,784613295325794
186619285473196837524572941638438526917847169352261358749953472861
020005900003009720004007010031000000407000001000050000082000007900070500100048000,728615934613489
725594327618831764259457932861269851473382596147946173582175248396
00051000850000860000064002027000000010000072640030800000800250006000410000400000,462519738531728
649987643125279185364318964572645237891194876253856392417723451986
00080000049000016005700920008400000070000090000200600000506020060007800810000900,326851749498732
165157469238684973512572618493931245687749586321263197854815324976
000900300000000000003000270008001000036080100059306000060000017000018002007090503,674925381291837
465583164279428571936736289154159346728962453817345718692817692543
007006001350004008006050000040082013000000605000070040000503000600000300200000400,497826531352714
968816359274549682713728431695163975842984563127671248359235197486
800000000630089000000030500508100030090000070026013189000600700010000036009700,857293146463158
972291467385645381297312974568978526413189732654724615839536849721
4700050090004103001800095200000300000070040030000197200005700151090270300000000,473825619925416
387186379524697234158251798436348561972839657241514982763762143895
030805071000010006020030009000070000082000900750003000200007500090680000010500000,936825471578419
326421736859143978265682154937759263184264397518395681742817542693
6100002700080100009000060000006023008009000140003000071067000000003760009000000,615439278238517
496947826153791642385823975614564381927156794832482153769379268541
000000700700300100001805349370501000100006000004080010000790000900003000080060400,839614752745329
168261875349378541926152936874694287513416798235927453681583162497
0230804000500000639000700000000002890760003400090007003052600087009400000000000020,623185497857492
163914673852431756289276819345589324716345261978762948531198537624\\
9000008041068403000002050604010809063020010005003000000000008000400050000000409,957136824126847
395843295761471582936382961547569374182694753218718429653235618479
0000000400002019001000907500340700900006000070020005000000006060541030007630000,978156324635724
198214389675583417269129865743746293851351972486862541937497638512
72060000900300700805023060080000007000009004090076080306080000030000002007003000,721685439693417
528458239617834521976576398241912764853165872394349156782287943165
00000307902000053090000000050000000100000204030040015700024160010705002000030700,541263879827419
536963578421654192387178356294239847615785924163316785942492631758
00547000220000000700600009090410000062000800100000478010002060900000000060000028, 815479362239856
417476312895984167253627538941351294786148725639592683174763941528
27000004000930000760341020903006100400050000000504006204000300100000000301000006,278956143419328
657653417289732861594964532718185749362547693821826174935391285476
920000400008009005004030069093500002000320040000000006497000050008003002000000,927165438368749
215514832769693574182785321946241986357836497521459218673172653894
00009870005073006200060000006000000700001500030200170000380201000920053000000000,326598714851734
962947612385165873429792461538438259176579386241614927853283145697
029000080001000704000010000002000017700902806004000090800006432000000070000004109,529347681361829
754478615923952468317713952846684731295895176432146293578237584169
931974631825427368519693145287815279643742516398139827456586493172
0100000404001305000000029000005000080040000003890000030050100009400860600300450,913865247427139
586865742931296574318174283695538916724342658179759421863681397452
00000900020000073000010025005000100307090210500000702003000098000080340000005000,347529861215648
739869173254952861473674932185183457926736214598591786342428395617
00380095080003200006549000000300062502000834000008000000029500000013210000000,423867951891532
647765491328984375162572619834136248579347186295658924713219753486
```

```
010006207020700053000000000060020004000000870001800526052070001403001600000300000,819536247624789
153537412968768925314245163879391847526952678431473291685186354792
08000107314002000030700000000301580005076000072080000060007008020810004000040000,582491673146327
958397586412463915827851762394729834165614273589238159746975648231
50041000030007006000700305000030069000105078000684000007000001000064800000000030,568419273349275
168127683459785321694431956782296847315672538941953164827814792536
01000030408070000950400010003090000000018000000503007006430000009005003700000050,917856324382741
569564392178238974615475618932691523847856437291149265783723189456
010300900000081006000060002000090008000050309006002000004000260000028005900630000,612345987479281
536538967142257493618841756329396812754184579263763128495925634871
126685217349568941273971382564324765891713498652846523917259176438
753514367298356872149147935682829614537931256874475189326268743915
00005030600017020060500201009701560001009070430000000000004000001005000400020,271958346934176
258685342917497815632512693784368724591126589473749231865853467129
80100406060000507000030000000820760010705002300004080000007000026300000000001000,851724369639185
472472369185398217654147856923526943817914672538263598741785431296
0000602005020006004000239010000000020304009060500000041002800900008020000005014,139867245572194
683468523971784359162213746598695281437341672859957418326826935714
000000004003007020100000064070031000060720530000806000006000002000000578034001,752896314863147
529194325786487653192916472853235981647341569278629718435578234961
9400000030050009180070930051000080008000072500020000030020008005000034700000000,946132587327584
691851769342512473869483916725679258413134625978265897134798341256
50210000006093000200006008060009000100000000013800025400010008000300600050209000,542178396867935
142391462587624593871985721463713846925439617258278354619156289734
9000000000104003006890510000300040000040106608000050020060030010503080000400000,971635824285174
963436892517192356748357248196648917352829761435714523689563489271
000100400006000302000002000002076540003500007000004020068001000207030000100000068,529183476786495
312341762859892376541413529687675814923968241735257638194134957268
800073900001009000090000107076020080108000002030000090004080020000007000000000064,825173946741659
238693842157976524381158936472432718695564381729289467513317295864
000000350090054800000078904200100049000005000003492700070810000005040030000003100,428961357697354
821531278964286137549749685213153492786372816495815749632964523178
090103700070000920008020030800000090900001005031008470000530000400000000000700500,296143758374856
921158927634862475193947361285531298476719534862425689317683712549
30100504000400090159000003000090000500000306003001080202068000010600000005000000,381795246764328
951592461738618942375259873164437516892923684517176259483845137629
8060050300004020000900000008000004032090050000034600020008300070020900800000060,816795234537462
981492831657689527143324918576175346829241683795763259418958174362
300000009590002600017000002803017000200600007000029080901000023730005000000000800,382156749594372
618617894532863517294249683157175429386951768423738245961426931875
283438952671379426815214598367586371492761239548952784136843615729
05000003024000800000320000001000000004189500000740003000015900095300200800070000,657491832249638
715183257649916523478374189526528746193432815967795364281861972354
006050070800060003097000008051080020200000010000003801000000000071205062000900,316958472825467
193497132658651384729238796541749215386173529864984671235562843917
020000010000039050030000048000300000040502010090800000200340050000000010200795,928645317147839
652635721948251374869874956231369182574792513486586497123413268795
000060020007190005900280700208000070000060040610000000010009002000000450007000,583764921627193
845914285763248951376795326184361478592876512439132849657459637218
71000982000000070200680004090005400000416000000000008000160009000070102800000500,716349825948251
```

```
673253687914397825461582416397164793258425168739639574182871932546
20000008098002030101005000205009200000006000060040105953090000400080000040000910,246139587985724
361317658492751392648894567123623481759532916874179845236468273915
00600070204001000920930001400093708000200100070004000001800600900000040000006000,136489752548712
369279365814654937281892651437713248596321894675967523148485176923
200000000046000003580700604000400007000067030064008000600200000305004021000103800,271346985946851
273583729614839412567152967438764538192618275349395684721427193856
005008200340000000600300090500008000060010054310006200900000008043590004082000,175698234349125
768862437159957264813286371945431859627793516482628743591514982376
00000000803000009408010920042000080300900600200600310070063000000912300000004000,974325618132867
594685149237427591863319486752856273149791638425548912376263754981
800503600005097210009200508000700001000060000003207002000000070000805090105006,812543679645897
213739216548423758961987461352561329784256984137174632895398175426
4036000000013028000000000500000008020340005000900460005001630000200090002503010,483672159759134
286261859743594716328126348975837925461975481632318267594642593817
60000009005000070800000000090503027003792006010070800000230610000000030500007920,674813592351269
748298574613985631274437925861126748359742396185869152437513487926
00064000002008100000050040008000420000180756005000000008020004602000950400905000,135649782724381
695869572431386154279241897563957263148598726314612438957473915826
4000071090790050000200403002000710000970006010513900200400000500000020000000407,436287159179635
842528149376264871593397452681851396724643728915715964238982513467
0945012800100025007009004000000000060084200000000070000010000405900800000650000,394561287816742
539725983461972815346638427195541396728267139854459278613183654972
007000960000040081000900002070000100900008000060120043100000080902600000000048,427851963693247
581158963472274698135931475826586312794312784659849526317765139248
00300040086701350050000000070060000103015084000003006790500018000400800000000000,193265478867413
529542789613728694351639157842451832967975326184314578296286941735
00490500700007000050030090691000000000042000043109000200007040300001009060020070,834965217196278
435527314986912836754658742391743159862281697543375481629469523178
008700012059008060000009005000700900001090063020000000700000000910000860307000,648793512159428
367273561984516274893784139256392685741927846135435912678861357429
00804753000000004000000000067095800405003670090000050000006480086000107500010000,618947532259831
764734562918167295843425183679893674251971326485386459127542718396
3050042608100000906020900105000000000000290400050800000604000009003120080001000,395714268814326
795672895413523469871768132954941578632136247589459683127287951346
197491875362562139874914687523387452916135796248279548631648321759
00810000000704001901050407009000008020000040000030020080023000005040700000005034,478169253253784
961961352487549216378327598146816437529784923615635841792192675834
10700004000000302036000007002000004090000105300900200021064500070000400000057009,187523946459786
312236491857562318794798642135314975268921864573675239481843157629
030750008080019073100080005600030100800000009000000001506007500200090390001000,932754618485619
273176382945654937182813425769729168354241596837568273491397841526
187158739462581263749493157628762984531826315974375492816914678253
20000000050047000300900620706190002070400160000004790000010000990070000032005000,273598146516472
893489316257861953724794281635325647918647139582958724361132865479
00800300090300007205200006000094700002000600008030040006003480000005000000700004,678213549943865
172152479368536947281421586937789321456267134895894652713315798624
00906104800039000120600000009400026000350010008540090000000006002000030000940000,379261548458397
621216854397794138265623579184185426973931782456842615739567943812
5004000320005600040900300004000000000000360050900008000008470009007080680250000,561489732273561
894894732651438176529912845367756923148125398476349617285687254913
```

```
7900000500060000700005061000540900063000010000006004300070000008000000030014790,791342658546189
273823576149254793816368451927179628435917265384482937561635814792
30010670900050001000000000600000984000070310000008003080000670043060008009000004,325146789896537
412174982536231659847468723195957418263582394671743261958619875324
0607100820020093060800300000030000200008000000001009030007000004000910076092040, 369715482712489
356485236791653974128291853674847621539938147265524368917176592843
00000302000001030004100200897000000004026090803000076000001460000004102000000080,695483721287615
349341972658976538214154726893823149576538291467769854132412367985
000900075800300900700010030230400790050000201000000000005300070080010120740089,364928175815367
942792514836236451798457839261981672453648195327579283614123746589
94060050000000097010700006300003500007610000040800005069080100000394000000006000,942673581365418
972187592463219735648576184329438269157694821735853947216721356894
0000403003020000490090075800600250000009760240080000000300008004700050000362000,786549312352681
749149237586467825931531976824298413675973154268624798153815362497
4000000007150200000380500008000000005004030020430090000570104070000002900230805,429763518715829
463638154729893615247157942386264387951382576194571498632946231875
803060000040000000000020007000200300104090060070680000000080230920010400300000010,853764192274198
365619235874592643781148957623736821549461589237927316458385472916
798138679542714823965685791324923456817257314689841967253396582471
300001000070605000000070090000008010002060500001000079000706000060300001109000002,326981457974635
128815472396753298614492167583681543279248716935567329841139854762
2100764000000000078000003000000510800001800700003060000030180402006000000020503,213976485965483
271784152936637245198492618357851739642576391824328564719149827563
10000004000489007300000001900903000040079000208005000005003000000000002080014500,197362845654891
273823457619719238456546179328238645791965723184471586932382914567
138832416957681527394397164825254389671529841763713695482468273519
0900004000000308000007030618020000720409000090080000400014020000000000400302879,793628415546913
782812475396185234967264791538937856124678149253329587641451362879
0300007000004008670001004030700002921000080000008030020000070040069000006000001,432896715951247
386768315942387654129215973864694128537529481673143769258876532491
30008495000000000000000078000960000100300000590007030003000400800100003074800601,321784956785692
314469531278238965147147328569596417832613279485852146793974853621
00407080001052090005381400008000000001000780009007401200040000070000109098000000,624973815817526
943953814267782431596341695782569287431235149678476358129198762354
02068090130040000660803002000009030000600000900005002890500600030000100500903000,425687931319452
876678139524157294368246318759983765412892571643734826195561943287
207300400090050020485000000500002060000007085600090230043000006000000000002008070,217386459396154
728485729613539842167124637985678591234743215896861973542952468371
01040060300000200800007000070200000000000870000006409060009000840000006000081200,917458623354962
718628173945732894561496315872185726439261549387849237156573681294
475581437692352874169794126538168593724243965817879341256615782943
70031000200340050005627000000000200000400000028701004000600200500030800080004036,749315682213486
597856279413175942368694853721328761954431698275562137849987524136
000450000000309000500062000006020003009001400010000060000090590301080010008006,123459768864237
915759186234945612873386975142271843659638724591592361487417598326
0142065000000570010074000000407100000000500000100079020090010005004000900020300,814236597263957
481597481263642719835789365142351842679428593716135674928976128354
0504000390000050000483090500060007000000800000013054000090000090050670810063900,157426839923815
467648379152436592781571648293289137546762984315394251678815763924
0100620800000900060010005000003400000300042000620000080400092005003008020500010,519762384478359
```

```
261632148957291634875753891426846275139387416592165923748924587613
186562138947674321859289645371135879462917584623328967514456213798
00000080006001400030400900000380005010000006009500030700000073009000501431005900,917562834268314
795354789612643827159172953468895146327586491273729638541431275986
00004030000860500003080000900000754000000400000208000040000000090020806000073004,251749368978635
421634812759863197542719254683542386917427968135395421876186573294
02003070905700030069000000500000000020467008090008405000080200000000020000096400,428531769157968
342693427815865319274234675981971284653346852197789143526512796438
00005002003200807000000300000005000380010900506829003000001200900030060000570030,891754326632198
574457263891129345687384617952576829413763981245915432768248576139
07090000000030086903050001709000010000010002018006357005600009000580000000020003,871964235254137
986963852741729345618536718492418296357345671829692583174187429563
500300020900700530034000000000020076000000100740003900010000040200000095007500301,571348629982716
534634295817153829476829674153746153982315967248268431795497582361
90000160000004010004086502000000000000008060006000308450090000820100405609030020,975321684268754
913134986572581673249392548761746219358457892136823167495619435827
040015070000000940000031000080760403600040850143000008900007000006000000080010,642915873183627
594579843126958276341367194285214358967896431752721569438435782619
00021000500000028010000030090100050020040070003002700900000008008005004040308000,863219475794653
281152784396971836542285491763436527819317942658628175934549368127
70000830000560204800009006000740003020800600000608000900075000000000090002000005,769148352315672
948824593761197425836238916574456387129641759283583261497972834615
08000020000000007000095304000670000090002000005000090003040502250006800600000009,589437216342861
957167295384831679425496152738725384691913748562254916873678523149
000490000000007004030270000003002105107000900000200500270069003000000010009003,827491536195386
742463527918678935421251874369349162875582713694936248157714659283
9000000001000000305200109000306010037000002506000000762180003000003000800070900,924817536618935
274375264189289346715137598642546721398762189453491653827853472961
020360001006084000003000007002000103000603000400020070048092000090001000070000200,924367851716584
932853219467562978143187643529439125678648792315295431786371856294
09300400587000020305100907000000100001034000000780200000007002009000008030050010,293784165874615
293651239874326571489918346527547892631185967342469123758732458916
800001500010006087002870103007030024000012000000000000400007038035000006000600001,876391542513246
987942875163197538624658412379324769815461957238235184796789623451
3002075600920000800503009100060001000058760007030000000106000000721300000900000,318297564492615
783657348912986432175125876439743159826831564297569721348274983651
0010094209000400700000030061000300000000600000900020000020010400000068004180030,871639425953842
671246571389612453897487926513539718246398267154125394768764185932
052408900900000608403000003000000402001000000000200090000802000000501005001098,752468913931752
864846319725367895142289143657514627389193584276428976531675231498
00000950090070004300403107000010560008760000006000709870000300010000000009000800,371469582926758
143854231976493185627287694351165327498748913265512846739639572814
159417359286823975614794163528651482973342598761968721345175634892
621265138479724863195658912347931547286316289754487351962592674813
045600000032080000000000000008900100056390000800005003000006240090000805001020900,945617382632584
791817239456789361524563942178124758639358196247296473815471825963
035200700000034060600710090060029000503000700070900042930006000000000000000520,935264781712983
456864571239386742915459316872127895364293158647548627193671439528
00006100050030000000300540200060239000790001040000000100027000009400100005000230,784261953562394
871913785462851672394327948516496153728138527649279436185645819237
```

```
270080500030602000001050008040010000820405000100000000750000100600030020000820405,279184536538672
941461359278345718692826495317197263854752946183684531729913827465
000300000700000400008007010300960500980700000000058301050000703010000000409005008,164329875792581
436538647219341962587985713642627458391856194723213876954479235168
030106720000000000000003960820000017008900000000950000010802080000010200003070,834196725956327
481721548639698235147175489263342671958563714892487952316219863574
00001024020306018000130000040002031001000000790000000607001000084030700000970000,769815243253764
189841392576476529318518643927932187654697451832184236795325978461
68000000000000710007004386001047000030000000800000649000090004003000850406005000,685173492349628
715127954386961247538534869271872531649758392164293416857416785923
0010030000500010000060803405000400008600007000730000004080002020010000000570800,481963275357421
986926785341592347618864219753173658492745836129238194567619572834
7058000000405003060207308000030000020000006006100070000000004370042000004680200,735864921841529
376926731845583496712497218653612357489268975134379142568154683297
004000031700000940103940806000003000000760000048500000060801700000079000000600008,694287531785136
942123945876276493185531768429948512367469821753852379614317654298
0749000008000005090020070070009001200000000145000900501007004280040060000850020,374965281812473
659956218743738694512629531478145782936561327894287149365493856127
00000000075008030039000050020600580300005920000901006500730000080006000267000000,642359718175268
439839417652924673581316845927758921346591732864483196275267584193
0080020000000073904007000001600398008240706000300007000800021020000000800020370,378592146265184
739149376852716253984982417563453968217537849621621735498894621375
07690000000000000030000010400070001003000080009086002010090070020060039000742000,576914823941238
756238657914482375691163429587759186342614893275827561439395742168
06590000004702010028070460000000950109000002000040000000000010006000006250089, 365918724947625
138281734695473182956159367842628549317594873261812496573736251489
142269451738524683917913274865876915324437529681698147253152368479\\
300000009102980000060000081593400000010000050004000060030050046006840000905306000,378614529152987
634469532781593468172617293458284175963831759246726841395945326817
0859700000020068007008000030060210300100085003000901076070000000000000100000005,485973216132546
879769812453576421938914738562328695147657189324843257691291364785
765356871924432698157179534682865712493781249536594386271623157849
010000030305001800000600100001800600030005002082000070006200050000006000057000908,914528736365471
829728693145571842693639715482482369571196287354843956217257134968
0907000000135940000400005078090000000400060358000000006900080030070400007010,895742361261359
487734168295578293146912674538643581729327816954189435672456927813
860000400900004050000080000000030980500000000085100300000600600940087005017004,863592471912374
856547186329176423598358769142429851763794238615631945287285617934
00000104700002001667000090019000000800000406900000000240078090007060024065100000,528691347439725
816671483952196257438752834169384916275243578691817369524965142783
00000000100640900000050000060090080800005340400210000005001008004030009301406500,926173854158642
973743859216562394781819765342437218695675921438284537169391486527
060702040005000006020050107050013800608007030002680000700401300000000000003000000,861792543375148
296924356187457913862698527431132684759789461325216835974543279618
0050000007000003092000065000307150007008000218003570635089000021000600009000000,435968127761524
839928713654693271548574689312182435796356892471217346985849157263
103200800098003500000064004003010000005080030000000086000004004600120000090005,143259876698473
512257186439465321987719568243832947651586712394974635128321894765
43700980000085006400000000200400000025060040090000002000000006040005000900300,437629851912853
764658174932164297583725368149893415627279536418386741295541982376
0100060380080006400600400906921000001000090800002700000090470084000000001000020,419726538728593
```

```
641563841297692138475175469382384275169256984713847312956931657824
09000020000309000060050000404900000010060923000005010000430000300020680900000000,597841236483296
175621573894749312568815764923236985417168439752354127689972658341
00000013080000329600500000018002005002060508060908000300010900000002908000000370,462978135817543
296935216847184327659723695481659481723278139564346752918591864372
00000600002030000005004000989050300100080090020000030554020000000409000016000500, 137926458429385
716658147239894573621365812974271694385543261897782459163916738542
008000001046000000020100000800020046007006010000408700000030000609070080000080304,398742561146853
279725169438813527946457396812962418753584931627639274185271685394
000004706005080041607010308000003000080700000500000009060008000009530600403906000,128354796395687
241647219358714893562982765413536142879261478935879531624453926187
00070300090080000000004009100000020500000700309508100000052007010000300030100948,451793286923865
471768214539146937825582641793379528164894352617617489352235176948
6070090050200100060087004000000089020020010580090401600000875000500000000094000,617429835425813
796938756421561378942742961358389245167293687514854132679176594283
0000000050050873000000300046008100900010030500846000015000000080000007019470600,738124965465987
312192536784657812493921743856384659271573268149846391527219475638
600145080000030000000902006000420090092008004000000805300216050080000002000003600,637145289928637
541541982376865421793792358164413769825379216458186574932254893617
09370002050040030008060004000700000030004200005000000700800000059270080300005706,493758621576412
398182693547247389165831564279965127834714836952659271483328945716
090005000000420000005000082000072094000000300080040700403090005070050049008000600,392685471817429
563645137982536872194724961358189543726463798215271356849958214637
600007020007590000004812050090000017000000000029810000010250600801000000040002,658437921127596
483934812756896254317415673298372981645741325869283169574569748132
10390400047000009000035007000040105700000001060002000300000040700000905060009002,183974526475216
398296358174328491657547863219619725483952637841734182965861549732
00000201508051007007000000605000100010006090003000020820000900060080007000060280,936872415482513
679571649832695327148218456793743198526824735961169284357357961284
00100390000407000200060050000032145005000023100000060060100740007034000000700003,571243986694578
312328619574786321459459867231132495867963152748817934625245786193
097000000500207400000080000800005000000000002708060000070420046150070000240500,197384652853621
749624597813478962135369415287512738964935876421246159378781243596
0000000002608005000403050104502300903091000800160004000000800900000020000640000,185427963263891
574947365218458236791329174685716589432632758149574913826891642357
783893617452371862549642975831958341627189724365267538194534196278
70560402000090060000210040700000527000041000508020600026400000000800000000500000,735684921841927
653692153487416835279327419865589276314264791538158342796973568142
80070930000300000240000800009007460004000600307602000000002900000090001000317020,825769314763541
892419238765392174658148956273576823149651482937237695481984317526
0270091050000002000800000005080000470006000090207150000060000110000509000000060,627489135493156
278581723649356892714718564923942371586279648351164235897835917462
987879354126617438259584972613923615478758269341436581792192743865
849847539621752364918693821574418975236926743185571298463384156792
0530008401980432050040600004000005300000200000105000008009001000000020931000000,653912847198743
265274865391427189536365427189819536472582694713746351928931278654
000000000600030400307000006000300800000078004000405371000104287004050000100062000,812649735659237
418347581926475316892231978654986425371563194287724853169198762543
10308009000860970000001308500600040385000000004100000040700000000800007900005000,163587294528649
731794213685276198453859364172341752869417936528635821947982475316
```

```
0000000000010008508409500000048009300050700608003000106030000003587010050000000,531862974962174
385784395162215748639349651728678923541126439857493587216857216493
6300805070050100007000400000000000000200172085004005016085200004000000200403000000,634982517925617
438718543926589461372361729854247358169852196743176834295493275681
9300014000080500000674080000700931006058000000000000040000030000906700003004009,932671458148359
627567428931274593186615847293389162574496785312821936745753214869
030897050000501600000060003000000002500080900300000167080750000710300095000000000,632897451874531
629195264873961473582527186934348925167489752316716348295253619748
00030000497005400000009002005003006600020130001600007030070900000200000010430000,156382794972154
863483769512725913486648527139391648257534876921867291345219435678
601007540807000010000000000300600030400000007300000060108032000060705002500081600,631927548827543
916945168723786219354214356897359874261198632475463795182572481639
00070540050000300000000070000600000000600590750001080048139605000060840070048003,169785432587423
169432916758926854317813672594754391286248139675395267841671548923
00000060000400000800300500005020600700940000527050080900503090096000870000004000,521849673694371
528783625491458296317319487265276513849145732986962158734837964152
000000014050000000640079001006920400000041706000050000708000008000000005020709,738569214951248
367264137958187692543592384176643715892479853621826971435315426789
008000000009004006610305800064100030000070001900800000001000000738900030050000, 548617329379284
156612395847764129538283576491951843762895461273426738915137952684
00309000206003010900010687001000800000060020069500200090000000081000050750001008,143897562867235
149529146873214378695378659214695412387936584721481723956752961438
030800006000401000100000380205000008000005010800604500304510700060000400500000060,439852176678431
259152967384295173648746285913813694527384516792961728435527349861
000090000760000002000040000900000001093004050710230000200006000050071300006500,123697458764583
912895241763936478125218935647547162389452719836689354271371826594
6500040070000020410000500001048000000600000109000000800270100470020600000040000,653184297897362
541421957863134829756268475319975613428582791634749236185316548972
354364592781189765432432918675657243198523174869948326517716859243
080600104900050000010980025004000001762100000800060407000012000000800050070000000,385627194926451
873417983625534798261762134589891265437659312748143876952278549316
50730000040157000200309010000008003500000040070500002000401800300000040000050809,587321964491576
382263894157649182735832765491715943628954618273178239546326457819
000605000800010000006080017007061034040000001003400020004700000708006005005802003,431675289872913
546596284317287561934649328751153497628314759862728136495965842173
25000060300000845000900000200090070040087003000300000007095000608400000090300000,251749683736218
459849536172182953746465872931973164528327695814618427395594381267
00800956005070000009250037080600079004000865007000002008065004000009300000000000,738149562651732
489492586371826315794149278653375964128983651247267493815514827936
5060089000000400500900001810800600090504006000079010000000800600000452007000000,526178934813964
725749523618178236549935841267264795183352419876691387452487652391
01820000905200086000905010000000820707003000100000090003501002008070000000000603,418267359752391
864369854172591648237674932581823175946935416728186723495247589613
06000097027013000000390000007000002010270060540010030000400007030000540005000000,164528973279134
856853967214697345182318279465542816739986451327731692548425783691
809300000106500380509084607030000500000300014000003005000009000000100040809000,869324715214657
938357918462723481659695732841481596327578143296936275184142869573
02006000101604098090000320070280000010000040600000030000870000020001000009600,427968351316542
987985173264742836195138795426569421738291687543673254819854319672
00800040073000006006400025707000000500900600003000784086073042020800073000000000, 518627439732495
168964138257271384695849756321653219784186973542425861973397542816
000059080300780960009000030006000070000000006245000700502300605000000020000408,467359281352781
```

```
964189426573594613827231978645876245139748592316615834792923167458
000000058805100037020000000000000070600000008001302000000070064061000003740800010, 436297158895164
237127385649958413726274659381613728495382571964561942873749836512
760003000004080030005000000000000002500329000790006730008000002070000064000005700,762953418194782
536835146279617438925453291687928567341389674152571329864246815793
03000580070000000060407250008049062000000000000020308000960400003800907000700035,234195876785236
149961487253158349762392678514476521398527963481613854927849712635
00850000073042000029000703500060072406027000800004006050430000700000080306000000,648531972735429
816291867435153698724469273158827145369584316297912754683376982541
690010008008000000120970600090800400402018050009006700040700000000000706000450,693514728578632
914412897563169785342347261895825943671254379186981456237736128459
300002000000900000600310540000160000030024058000005000402000030050003100860000420,371452869524986
713698317542285169374139724658746835291412678935957243186863591427
10060500002001000050008069030100040840030000005800490000000020600250003080000000,149675382826913
754573482691391527468467398215258164937735846129614259873982731546
02087000000000000400123000100700080800030000900450003008000250300005890001007300,529876134613549
728487123569136792485845631972972458613798364251364215897251987346
800400000400530008060009000090004300100000609005007084340005900076001003501000000,859412736417536
298263879541798164325124358679635927184342685917976241853581793462
00700009180607900000001380606020003909000608010400000001000063009002000300000000,437628591816579
342952413876765281439293746185184935627571894263649352718328167954
00400000010390460009007250000002000600010003000700040000500030003071000200004601,754286319812395
467369147258431852796627419583598763142176528934943671825285934671
00048703500000000703000080050600004600070020000103600064820000007000000100035000,216487935485319
267793256481358692174641578329972143658564821793837964512129735846
0000040000000050770000020006000592300300700800060000900030805008500630050020004,625874319431962
587789351246867415923513297468294683751942136875178549632356728194
000000093005600004800005670040002000300000070063004500287000300000005063000800,672148593935627
184814935672147592368359486217286371459528714936491863725763259841
900107008500000000700080960000060500000000000208000079670005100009200000820096030,946127358583649
217712583964497368521165972843238451679674835192359214786821796435
0600002000005800060000000840016000072000031505700000300007000003100060718000300,865914273342587
916197236584931625847286743159574891632659378421423159768718462395
0800520010509700009006030008100000300000820900300000720800000060003900009000060,786452391352971
846941683572819267435567348219423195687238716954674539128195824763
5000020000080002011030080006003000070002000000007905870080000609603007000000003,574162389968753
241123948765649385127857216934312479658731824596496531872285697413
0000000706900010080080009300095060400309000005001040090050000010070000000000584,453698172692371
458718452936189526347234987615576134829865243791947815263321769584
8030000100070600300100009200800500097003802005067000000180000090000000300000896,853942617297168
534614537928182456379749381265536729481461893752928675143375214896
042700360097000000030205009070806040008002000000300000000000763090080050030004,142789365597163
428836245719379856241418972653625314897984527136763491582251638974
00004028009058700000003000300059002007000000003240900000600000030407006872003,673941285192587
346854263179348759612927618534561324798735496821289135467416872953
0300000009000500404750980000000930020750108005000000002080070800015090093020000,638142957921357
846475698132184279365267531489359864721512983674846715293793426518
00000156001000007040006300800040005060013000000800500000409000390000700000547009,283971564916854
372457263918729486153645139827138725496574392681392618745861547239
0000000403000040050010027000023009000000002040006000000003196045709300100060000,759136842328974
615461582739872345961536891274914627583287453196645719328193268457
098004500000000040000082000004050603003000280002690010360400800009000000405000900,198764532236915
748547382196914258673653147289782693415361429857829571364475836921
```

```
00400902000000140800070003000040510000000730020008004007830005900205001030000200,314659827576382
149892174653689743512451926738723518964267831495948265371135497286
00000040006027000500000090350001030020004900000005002002000049007000600410603000,125938476369274
815784156923596712384273849561841365792632587149957421638418693257
812592138647946381275718245936253796184829467351675813429431952768
00180000620010080007005000015000000700700000998020650000600000520069030000003000,491832756265197
843378654921152948367647315289983276514736581492524769138819423675
59700000001430080000000010800076000049800000006530000001004006005100400000085000,597618342214357
869638942715852476193349821657176539284781294536925163478463785921
0290300006000003000005190000009804140020000630004002900300000005800000040020000,529637184617482
395834519672762398541491275836358146729283951467975864213146723958
972395472861458319726961247538273856149714963285532781694689524317
00400000000078003709000000184000200000200000200170000000800301006900047009312,834192576126578
493759364281518437629973625148462981735295713864381246957647859312
0534070600402507002080630000000240500000408000500000698200000000000000400000870,153487269649251
738278963541817632495326594187495178326982745613731826954564319872
794816794352269147538183529467457368219671952843948673125325481976
000000540000005007500870002007000006080004000000690204000940051006201078000000600,798162543261435
897543879162427518936689324715315697284872946351936251478154783629
03002000090000400061008000050000031008010509000603000402900004640026050000000000,734521968958674
231612983475547896312283145697196732854829357146471269583365418729
080090700700001080920060030000006000000320000001908300300100820400700001008000000,183295746765431
289924867135237516498859324617641978352376159824492783561518642973
30700000005001020000003067009076001000500300600028039000900000706000000230070100,367842951958617
243142539678893764512425193786671285394519426837786351429234978165
138234816597923657481578194362146328759859473216367281945412569873
00023040031000002005000700600000004260070010000000860006380071080000000025000004,867239415319546
728254817936978163542642758193531924867496385271183472659725691384
200600070000920003080057600030200800059000107700000005006000000318000200590000010,245638971671924
583983157642134275869859346127762891435426513798318769254597482316
7000000304600000510000974000508406030000060050003000840051000000000000036009000,728514936469238
751513697428257841693384926175691375284945182367872463519136759842
0740260000590000000000000000000360470308200050090000200030700020008059908500006,174326985359841
267286795413892153674763482591541967832615239748427618359938574126
951985617423348196275591273648726458319863524197417839562259761834
08000003000000017000009000002000003270058000901500380503142010008000000000050,487156932953428
617261379845518263794632794581749815263875631429194582376326947158
00000020603040050910000003002008530000160080060030000400000109000000005054020000,598173246237468
519146259738429785361371694852685312974862531497913847625754926183
02030000010600704304306080200000018000000060004000007008070009060042000002180000,825394671196827
543743561892237456918519738264684219357458673129361942785972185436
0000080001050908006400050000000000903400100052000006041000800030904000020531000000,379468215125793
864648215397716542983493187652852936741267854139984371526531629478
4000603000002000008060000003240001080100300607000000005810006000005804100700020,452968371931274
685876153492324697158518432967769581243245819736697325814183746529
00002097000009040807000000000810092300009640000400003003046089006080000890007000,138624975625791
438479358126564813792382579641917462853753146289246985317891237564
00000960000000501010000030200085300040020000001300700063400107000003006002060800,735219648924638
```

```
571618547239296785314347126985581394762863452197159873426472961853
9000400600000082006000017000020500400407000080504001200000009000008000000260800,928547361471638
259635921784192853647346712598857496123284375916563189472719264835
05030040000090000560000000000000020030208000007700500060402830500360090042000006003,859362471134978
625627154389596427138248613957713589264472831596361795842985246713
00000007000009050405060800000050002000907065000200900300000008000000465468000790,984253176623791
584157648239816534927349872651572169843795426318231987465468315792
000780010015000200004000008098600007000000480007000002706890001900507020000460090,329785614815346
279674921538298634157561279483437158962756892341943517826182463795
090200580200060000000405000001042065000000408906000210100006040000039000030500600,493271586215368
974867495132381942765572613498946857213158726349624139857739584621
08000001290000007070004000317003000804000270029001000550000300000080004004000200,483675912951328
476762149853175934628346852791298716345527463189619287534834591267
000001063000007000003205010007002050000000908090000370600000180200050000050013600,875941263126837
549943265817387192456561374928492586371634729185219658734758413692
00093060020805000360000004003002580000000000000080060075600002906827030000045000,751934628248756
193639218754163472589827569341594381267475693812916827435382145976
00003000501000000200000006000056019050004003819000860008000300030004000206150080,729436815613895
742854217369348562197567941238192378654485623971931784526276159483
0000100900036000084210090000000006708000000000400200306200001294008070800060009,568713492973642
158421589736142835967785926314639471285356297841294158673817364529
792287935614631457928874192356592683147345721869916348275728569431
153245183697952348716438761925167925834796234581814659372523817469
03070928000080000509004007604007600000020000009003000050000904062000000700020000,435769281627831
495891542376243176859576298143189453762358617924962384517714925638
000000000002065904004001260209710580000050000000090009000050010070409007040108,396427815182365
974754891263239714586471658392865239741943182657618573429527946138
400002009009030700201050300054000072070000014100000800800013000007004000000003,437162589569438
721281957346654381972378295614192674835846513297913726458725849163
3400000006002103000010008079748000200000300900000100600030020080900000006008000,347589612658217
349291643857974865123162734598583921476715396284839452761426178935
09048000001000040000300000005000907004079030007350600300560100650091040070040060,792486351516937
482483125796835614927164279835927358614349562178658791243271843569
0000043000009706100300005000046000000908500015000900000850000096007040701000000,617524389845973
612932168574374612895269785431158349726423851967596237148781496253
07600500030900000040000000090704200000062309000350407007020060901503700500000003,176295834389147
625245638971893714256754862319612359487437921568961583742528476193
007002000010460003000010000003004010005300070800000500000621000002080600070000050,457832169918465
723236719485763254918145398276829176534584621397392587641671943852
00030000700057903000000400002700069009060050004000200070000005806003020002900380,581326947264579
138973184256127835694398641572645792813739218465816453729452967381
80000700050000010000000000000001406000468030070003590003006080000000090060800074,893157426572346
189641928735389714562254689317716235948937462851428571693165893274
294298453761346529817789341625152867349831674952425938176967215483
01050000000908050720030000002000300071603000600090108060009700900000000050200,819574632346928
751725136894982415367471683529653297148268341975597862413134759286
10400000000010600000083020000000300045020900280005000900100000020048009008630000,174296835832517
694596483721719864352645321978283975146967152483321748569458639217
0000190000600000059000207030040019000900046000005003000008300100004027002300904,427619538861537
249593842671358476192279183465614295783945728316136954827782361954
```

```
4000087000050040200709203600020000068500900000060000000063958060500040003000000,429638715635174
829178925364792341586851296437346857291214763958967582143583419672
00006015000000007000700962870005000200010003000300600020000895300100000090006010,947263158682951
437531748962873695241269814573415372689126437895354189726798526314
6000001005086000200098000000000106070000050000000002010007630002000809030906001,623479185548613
927179852346284591763796324518351768492915287634462135879837946251
7400500001503000000360000000003604000091050081040000300000050090084030300697000,748251396152369
784936748125527836941463912578819475263674123859291584637385697412
04000002100900580000826000000038600400000000609200050904800320000090000050068,746893521329145\\
876158267493912538647435671289867924315591486732683712954274359168
00000004030006500900210005805000000300840000106000190000008000000250000804600000,985372146341865
729672149358159728463238496571467531982523984617716253894894617235
0000051000300026070140609000000050400000400000701000005007030120000009060320700,726945138539182
647814763952382697514195234876647518293958476321273851469461329785
4000608705970200060000000000700006090300080400004700026090000280823000000000000,423169875597823
416816754293174235689235698147968471532649517328782346951351982764
70000008000007005060000403000080007000305000510000030150040000309000061007108000,734569182281437
695965821473493286517872315946516974238158643729349752861627198354
326283654971149782563326145789857369142964523817718496235532871694
015070030800900100203800570681005200000000306000000080000000000520900006308012,915274638867953
124243816579681435297724189356359762481132697845478521963596348712
367527368914964832175783145296152679438278413659395286741641957823
40020610000008040006001507200006000370015006000080700007002804000000000802030017,458276139127389
456963415872514962783789153264236847591371628945645791328892534617
00000030700000009000000508200056000009000350100700002008015620600030900010067800,985671234723584
169461329578234856791879142356156793482398415627647238915512967843
891491283675359862417768431952214795368126359784845627139973148526
30009120640000008102006054000000005000008010900000280000100000005306004034050010,358491276467235
981129768543813679452742583169596142837671824395985316724234957618
30000009000000170009010000008009000701030000002070006000790020080105900600002030,316527894524986
173879314265438659712761238459952471386145793628283165947697842531
30810500000900000765003004001000800000001908000000604803000096001600503000900000,378145269149826
357652739841914268735736451928285397614823574196491682573567913482
000300470604070008800109500300060000001700000400000090000010010003085060000003,159386472634572
198827149536385964721291735864476821359943658217712493685568217943
0508703408704000210640310700063100000010508007000000504000005000080400000100000,152879346873465
921964231578586312794421957863739648215648793152217586439395124687
8000000002058100069000601200000040020003809010400005000891000000000085600000000,861249753275813
496934765128196574832752386941348921567589132674413697285627458319
08000000400706503005000470002810000001500600007400008000002000000400570000010060,286731954497265
138153984726628179345315846297974352681549627813861493572732518469
00000800000150300400000001900874005300013600000000140030070008085060030046000900,459618372271593
684863427519618749253524136897397852146132975468985264731746381925
00007800003700010000400005020000000000000508008005006006020010045700030820000605,512978463637452
189984631257253864791461397528798215346376529814145786932829143675
0600002700370800069000020000100000000300009040000061600000100020300048041009600,168935274237184
956954762813516493782873621495492578361685247139729316548341859627
837897643125346981752289475316571236498465317289718592643932864571
000000200006700000742800900003026001190407000000000706000000000100400900000718,519643287836792
```

```
145742851963473526891198437652265918374681274539357189426924365718
80040620704003560000208000005060083407000050000000010000160000000800301400007000,893416257147235
698562789143259671834371948526684523719938162475725894361416357982
000010000005003022000007845008000004800600560372000040003000030000702800000603,837412569964578
312251963784572841936148396275693725841486239157319657428725184693
4000075000805100009300000000080500000007000981060000090086004073100805000009007,461927538287513
946935468271724895163356271489819634752592786314673142895148359627
60072900090001000050000020309000260005070040000302000206050030040030000100207000,613729584982541
673754863129379415268825976341461382795296154837547638912138297456
00600920807008400602000300000038007040000000807000002010002069080007003000090100,536179248179284
356428563791652938417341726985897451632715342869984617523263895174
0004000028090021007000800400000002400000900809054070000007020000000003070834509,365417892849652
137721983645587361924416729358293548761934175286158296473672834519
000050016200000000000000050050006000767004002100030005000000009402070000090615004,943752816256184
973781936542538261497679548321124397658815423769462879135397615284
06048090502000080000020003085076300009050000600002000800400000090600084000007,163487925527319
864948256731851763249792548316436921578619872453375194682284635197
06740508040800006000000090003706049020509000090003002030600078009000400006000000,967435281418972
356352168794183726549624519837795843612231654978579281463846397125
0602700008275100001000000000010800001200390030060020000030090050000700000800001,963274158827516
349145389672796128534512743986384695217671432895458961723239857461
040001003008400020021307500500000000300084099700020850502000000001090000040000,745921863398465
127621387594586794231132658479974132685459276318867513942213849756
03056090000003070007010000400600430000000190000250006000000201950020000400600050, 234567918185439
762679182534516894327842376195793251486368945271951728643427613859
149429851637957263814318547962642189753891425376235796481764318295\\
72400000005040000060000020200009608650001007000000012090500000017200400000816000,724968153385142
769169735824271359648658421397943687512896574231517293486432816975
297278396541712963485956748312384215976841632759529174863637859124
265951426837138694752629517384574283619493162578785349126216758493
736762345189251784693639152478874639215316428957527913864948567321
745475362918352671894869234571714895236523716489147928653698543127
000001000604007030000000020000002008000300000371400000407500001200608704080100000,759231846624857
139138946527945762318862319475371485962497523681213698754586174293
892598126473389641527467253189125798346832519764654372918971864235
00030090092071000000600004000003000000290068060100300000000310874000008930107,571348926924716
583836529741789463215153297468462185379297651834315874692648932157
719436719582861972453529483671743561298372895164685124937194637825
00207080090080063000001602978000010003000006050000000607028000010507000800000300, 162973854974852
631358416729789635142231749568546281973697328415413597286825164397
900702045040036027050080003000000006940000003070084600760040000000000508000000,963712845841536
927752489613285641739694273581317958462176394258439825176528167394
912952186437231469758597832164684571293369754821415928376728613549
0000004007000000653087600005730000000032000002000409008603000000070000400902086,265193478719248
365348765219573619842894327651621584793986431527152876934437952186
```

```
00000300925047030800920004000700000609005072080060090070000000020000800000060050,468513279251479
368379286541537921486196854723842637915715348692624195837983762154
0060800420000250090000000000008040030000008006000009005070000302400607809062500,596783142784125
369231694758158947236943216875627538491465871923312459687879362514
158754182936412536789675819324938274561349768215561923847827451693
286952684371675491832294863517381275469749518623123946758568732194
700408900800002000200900600460020100900800060001006709000000000050402000004510,716438925849562
371235971648468729153973815264521346789154297836687153492392684517
00000400909352000000070040007230100030005000200008700300000084010000000540002097,726814359493526
178815793426972361584381459762654287913239675841167948235548132697
00370080000008290120040176090020060800001900000063000000803006000076102000000000,193765824647382
951258491763915247638386519247472638519721853496534976182869124375
000010000040000580000005700000704000000590001070020008031042050024050000807009240,785213694143976
582296485713318764925462598371579321468931642857624857139857139246
0012705060300650000000010700020000100000340008600000008000007007300102406000900,941273586738965
241625481379352796814179834625864152793283619457597348162416527938
00030000595080234000804027006500000032000406000920070009000000276509800004000000,642397185957812
346138645279765183492321974568489256731893421657276539814514768923
0001900000020643106090504080002106900000000103040000008040056005000004020000000,843197562572864
319619352478457218693286539741931476825398741256765923184124685937
05000000008700000020000700000097580800000100030120900002509603001000050070060810,756931428948752
361123486795214397586897645132635128947482519673361874259579263814
00000460040007000000025000006204090879008200300009050030900800050068000040007006,825394671413876
295679251384562743918791582463384619752136925847257468139948137526
0400200050580010000103000020002008000008507040030000007004035080000006000730008, 346927185258461
937917385642765214893129853764483679521672148359831592476594736218
0900503805000920046008300000000000000600000082023700900570000000040003502000400060,492156387583792
614671834259854321796916547823237689145769215438148963572325478961
0026000009040201060000010040067050005700100004000690000000073013040000009050000,312648957954327
186687591324896735412573214869421869573245986731138472695769153248
000500019920003000600000500000207600050001000000650000100040020703000090000106407,374568219925413
768681972543439287651256391874817654932168749325743825196592136487
6019000002970001040000020000620000080040900000010800000090080100304070000201360,681943257297856
134534712698462537819815469723379128546723695481156384972948271365
00008500003607000501090000020060000000813000060000000900007082700506307009010,724385961936271
845518946372293657184475813629861492753659128437182734596347569218
080906000000540069070015006100000900790000530040000000000830140000000300080010,485926371231754
986967831542613548297879162453524379168796215834148693725352487619
00004106090006002030000800000103200000000030500000100040800005050090200106300048,725941863918563
427364278951671432589489157632532689174247816395853794216196325748
247527436198148967523352184679769352481234791865876543912915628734
75002000001006500000009350009000730000050040000003009000602014040700006000001200,753824961912365
487864179352489216735326957148175483629537692814241738596698541273
0040523100004600002100800600000000303001075008000012000000040000038001620000800,864952317973461
582215387964152879643439216758786543129398125476547638291621794835
09700000030000045052600000305040200690080024000000080004007000800300020200005604,497538162381269
457526714983158492376963871245742653891634927518815346729279185634
00000300400520180010008600020000049080000050000090006100856200000000203000000059,682753914345291
876197486325276315498819647532453928761938562147564179283721834659
0000060702090500001002003000000000070050201030000000900001640056040020003000007.534816279289753
```

```
461167294358691478532748532916325169784972381645856947123413625897
0040030005010000000000600000071020010760005086000070000043000000050408708200003,684923175521874
639379561842453719286197682354862345791215438967936157428748296513
09000600007100000000000306010260400240000089000009030007100280000000003400700,591836274637124
895428957316319268457245371689786549132964713528172685943853492761
0070062000000000340030009001000000536700109709000020900670501000009030040003007,357896214892147
653461352798214935876536728149789461325923674581678519432145283967
009040100000200006600001030098060004000000000003070000801620300902014060040003070,329846157415237
986687591432798362514264158793153479628871625349932714865546983271
000801900050000800700063000300100089000900302800020000170000005200085000060200000,432871956651492
873789563124326157489517948362894326517178639245243785691965214738
0000703050000000909003040070600501305000000000370800008000095005001000000009046,648971325731625
498925384617867452139594163782213798564386247951459816273172539846
9037002000510000092083091500096215000000700000005860100600090200006038000000000,963715248451286
739278349156849621573615973824327458691786534912594162387132897465
01000257000030108002805900600720690000050010000300000080000010009000000060703, 319682574576341
289428759316147236958862594137953178462785423691634917825291865743
9000000051640009002006003809035020400000000000802010080640020001030000060001000,938527461516483
792724169538197356284852914376643872915389645127471238659265791843
0043009008079405000000000008030500100001070000060034080970600400000009006000010000,654328917827941
563319765248738596124491872635265134789972683451143259876586417392
0900760054030000005003002009800030000700800026302900008000090000005000026030000,298476135413529
687567318249982153476175684392634297518851742963349865721726931854
08006010000070004060500000026004300014020800000700003007000600043000008000001400,784362159312795
648695184723269543871143278965857619234978456312431927586526831497
8400000003007008590005830205100020008000571909020000800001300710000000000002003,845326971236179
485917458362651897234382645719794231658469513827123784596578962143
3100002000023006000900000000000000000000500000501402000006004302200600075704003000,315846297472395
618698127543823769154947531826561482739156974382239618475784253961
09268700050000308000000000000500870000100000300708906080000302206000051001000000,492687135517243
689863915247129536874678194523354728916785461392236879451941352768
254962745813648397521259168437173524698721836945834952176596471382
743974356128841962357395714286726583914583629471219847635467135892
479742819653618723594425981367379546281294168735583274916167395842
0030026005096300000280540000006029001009800000500000002000300006009025000000406,173982654549631
872628754931834165297217498563965273148752846319486319725391527486
00000008020950074065000020000025000700000609830084052004070000083000000700000650,174362985239581
746658497213891253467425176398367849521946715832583624179712938654
008700050200000700600000000700008900090005001841070000010040000400506020006090000,138729654259684
713674153298765318942392465871841972365913247586487536129526891437
00600005004500020700200060000340080000026000087000000100704003060000700000500008, 786342951945681
237312957684623479815451268379879135426198724563564813792237596148
8200034003400109007000000660102008900060000000098010000000001000406030000032000,829763415346215
978715849326671324589298651743534987162463578291152496837987132654
900000047003000890080000500000070058730000002000040060208430000004905200009000030,952381647643257
891187694523496172358735869412821543769218436975374915286569728134
74900000010002000008090040000010050035000820000100309800030000004010002900487000,749631825135824
769682975413298146537356798241471253698517362984864519372923487156
0000078000000300972000060400870200040036700200000300070800030090000500006000008,314297856865431
297279856143187925634453678921692143785748562319931784562526319478
```

```
C:\Users\maxan\Documents\CP 468 AI\CP468\A2\sudoku_@pa=68, Group 3, 2019-11-11, A2
                                                                                 November 11, 2019 13:53
040000009000089560000007010200600795600400000980075000400900000702060000008000000,543126879127389
564869547312234618795675493128981275436456931287712864953398752641
007600000086590203902730000070020304054000980000050600000003900000500090003720,537612498186594
273942738615871926354654371982329845167215467839763289541498153726
00100862000010009000000700080030000630080000000095070029000000070030100006081900,751948623284163
795963527481897312546345876219612495378129654837578239164436781952
70020001000000600804207100303009078000000040000006002008010000003040007400603000,768239514391456
278542871693134592786926718435857364921685127349213945867479683152
8050200000204010000000030808000000130000090002800074050003080001000530000100702,875326419923481
657416957328789514263134672895562839174657243981241798536398165742
000700005390000000002000000000080279000300000010097040003002590020001304150009007,461723985397658
412582914736634185279279346158815297643743862591928571364156439827
4060020030700000010200370400800000040658000700020000010006007060100800000384000,486712953573849
126192563784658937241241658379739421568815296437364175892927384615
09000000002000003806000000019080020080000009030020610000340072000019400063800090,395264781142758
963876193254619485327287631549534927618951346872728519436463872195
000709030600000070000800602030000700006000000054200640500000080000054302800009,541769238638215
947729483561263198475854637192197542386415976823986321754372854619
3070090000020000070400000000030001510002000000074300030090674070030190400600200,357249861912856
437846713529724368915183925746569174382238591674675432198491687253
009060005063400000100290000000031800080000000000009060200000900800042041920003,879361425263458
971154297638926543187438179256517682394682734519395816742741925863
0900102470500080600070600010605007002000014000010000000400060080000900000400870,698315247152748
963347962581469523718235871496781694325524187639876239154913456872
00070000091000006040790300030000200110645000000007000063100009290000470000500000,632781594918245
763457963128375692841126458937849317652563174289291836475784529316
296263974581734856129195237648628149375876593412452718963319462857
56000000007300100090007020000800700600002500080000019030000200015030906870010000,563921847427386
70000850000306000041007583000000000007003060080010040020000054000000310031050280,762348591853961
472419275836195684723247593168386712945928137654574826319631459287
002000870000700060000090000300020086080004005406000900509600000708000300000007,642135879195748
362738296154357921486981364725426587913519673248274859631863412597
80000020307608000090360074000000000729000350000004026000005070000060902000000400,814579263276483
519953621748468352197729816354135794826382945671547168932691237485
610000000090000000203090000500000600300060070080207009008050093760900820000008706,617534982894672
315253891467572389641349165278186247539428756193765913824931428756
000001070009000400700000020095000800008600502601008000040860050906500000002710060,864921375529376
481713485629295147836478693512631258794147869253986532147352714968
000000000600090500090530000004050230170060000530000001200600400400023719009000000,325786194647291
583891534672964158237178362945532947861213679458456823719789415326
001000000000006379306040500000000608900007570400018040310009000008000098007300,861573429245819
637937624851312785946689341275754296183473162598526938714198457362
00340007005960300000001030000840060084000000000000090100308700006000800047059300,613485972259673
184478291635791842563584936217362517498125368749936724851847159326
00090000608000010000003000000040018000000900095821000050008000402600050300090004,127985436583264
197964137285236749518841356972795821643659478321472613859318592764
300050010060000000000208350598030000030007000000801000009600000780003500010000008,342756819865319
247971248356598432761134567982627891435259684173786123594413975628
1004500082080706400048000130005100000007000200370401007000006500002000000000000,193456278258371
649674892513462518937519763824837249156721984365385627491946135782
705003000016000000000020005040500000800007000032000000400600301001040750000850620,785493216216785
```

```
439394126875147538962869217543532964187458672391621349758973851624
4000000200080026400090001000800050000000040075000600000904001006087005027501000,473619528518732
649269458137382145976691873452754296813835924761146387295927561384\\
00781000000800000100000000019200000600904000500060700000090005204006010060008092,927813654348625
971156479283419287536673954128582361749831792465294536817765148392
04000900000140000100000000006000430500004607020900010050001090260070005401200006,648329751935147
862172568943816752439593814627724936518357681294269473185481295376
120000000009050000000820000000435100630020809500000400300005500400000082090000,127649583839157
642654823917278964351416375298395218764943786125561432879782591436
9000001000004000200000306060501290000000020002304008100030040009401000006050803,943526187567148
392821973465685712934394865721712394658158637249239481576476259813
0709000522050004000840001000002400000100070900000900000400020000031000530870010,173964852295718
463684523179958246731416357298327189546861495327742631985539872614
406200000058003000900070000320604508005000007000030200003002000540080000060500020,476259183258163
749931478652327694518695821437184735296713942865542386971869517324
0024703500000360080000810040476002005008000700030000006000000020005030400060007,682479351174536
928935281764847613295596824173213957486361798542728145639459362817
002007001387200000000000000000104280060000004000050000700001006000708040510420080,462987351387215
469195364278951642837623879514874153692748531926236798145519426783
90000000000008520000000500040000000083020038170081002300000083000200704900,965821734317469
852842375619538147296179256483426938175681592347794683521253714968
34000100000270040007000380100100006000000008000910007000080013400000096900060700,348521679162798
435579643821731854962294376158856912347627489513485137296913265784
0000000000920000570000480109500000710005000686210700000809000000600010000025709,586319472419278
635723564891395486127174952386862137954248791563957643218631825749
10030590002300400000007801000002070758100000000500032900000800000027080000000,176385942823914
756945267831319642578758139264462758193291476385534891627687523419
002000000090070000050600800070450003080009520000230000800006050940000030300080460,632814975498572
316751693842279451683183769524564238197817346259946125738325987461
00060300000095000003074090500000019005000631800090000000400317000800009086000,795623148641895
327823174695532467981974518263186239574268751439317942856459386712
00200000601060750000705009000010080060080300700000000200000080309260100051030000,592481736413697
528867352491974126853625843917138579642246715389389264175751938264
020000003000000165014000000010630000300804000520010100400065090000400040903000,921738546384695
271657142398475819632219376854863524719132487965796251483548963127
485489531627394812756817456293526793148258347961761925834943168572
08003010010600798000200040009007480070401009032000604000009000007001000003080000,489632157136547
982572198463691274835754813296328956741865729314947361528213485679
09007000370050280000000020900702000008000300000518930050000000006230000832060000,291478563763592
814458316279317624985984753126625189347579841632146235798832967451
706285000085006000300000008600007040000003000140020800000000500407602430000000,746285913185396
247329174865863951724257648391914732586671823459598417632432569178
09760050020600007008000000610090700000805100008004090724900010009000000100702000,497618532236549
871581327946615293784942875163378164295724956318859431627163782459
700000000400120009000000000060000409207005300300060072000009020530700190100430000,781694235643512
987952387641865273419217945368394861572476159823538726194129438756
09600000085000300930400008016800002003050800090000001000000960043900200080006035,296184357857623
419314795682168479523432518796975362841521837964643951278789246135
00000809070002000800900030000100400000000001050800020107480009048090200300001500,432158796765329
148819746352271934865983562471654817923127485639548693217396271584
2061700000030200000400801060000000038000647000000001000000004690007200430000068,286175349913426
857745983126569712483821364795374859612152638974698547231437291568
```

```
839392817456713928645946375218258146793827594361435761982169283574
60000570850090060010400000000006800000300007000517000008000301050001000001038405,639125748582974
613174863529317496852495382167826517934248659371953741286761238495
0340000000800096060983000100000780090340001000000000000000420060007700010608,134679285278541
963659832471542197836963485712817326594386754129421968357795213648
1002000870053800000301900000003400540000007000080021000000010020000030004010002,169245387745386
921832197456621734895498521673357869214973652148216478539584913762
3000600000000300041070000309062001000400000020000905000500600030004000002090571,359261748267843
159418759263593628417784915326126437985971582634635174892842396571
800260004007000061000000890000000080500002702007001596009000009804000000076005,819265734427893
561563417892971652348354189276286734159635928417798541623142376985
00040006000309000000060000996001000810080302070000040000100000809000204040007003,295481367683795
142417632589962514738154873926738269451321948675879356214546127893
000000893004008020000000007000005000500290080902004710007100400209400001050009000,625741893174938
526893526147748315962516297384932864715367182459289453671451679238
8000000000046300010000009042030080000006000000874002040000094023071008060030,869315427275946
318413872569942637185781254693536198742327481956694523871158769234
0900064000000030500020586090005000302300150440030200000000002010600000580400600,895136427642789
315137245869961854273723961584458372196376518942214693758589427631
1080394020000421070000000030900600010038012600040000000900000300010008040000000,168739452935642
187427158693892364571753891264614527839289476315376215948541983726
398948763251234675189589314627671982534427856913163249875895137462
700000201030000460000004000600030000087006002000005700004000035500200010003007600,745369281132578
469896124573659732148487916352321485796274691835568243917913857624
000001906000000537300040000700006001003000050001430008000680700006000005000709000,857321946214968
537369547182745896321683172459921435678592684713476213895138759264
849612849375279685413568134792341927586485396127126578934937412658
4007000007080645000500830010060000000300910000000890005008430000007000010006000,421795683738164
529659283741196842375843579162572631894265918437984357216317426958
002003070005000609070210080800000905007000030600100000600700000080570000000098,982563174135784
629476219583814327965527496831693158247368971452249835716751642398
00007080200000071000054030000700000030050200408027000004100000750090084089000000,695371842342869
715871542369527613498936458271418927653264185937753296184189734526
7000625000600130080025000000010050633200871040000000085040000000856000070000000,748962531569713
428132548679481295763325687194697134285856479312213856947974321856
4230700600000900000030002013690000000000000290004000600010340007050610050030072,423875961518692
437769341528136987254874523196295164783682719345347258619951436872
105002309000000000060495000041000900000500700007001006000063400070100690000050073,185672349294318
567763495821641237958932586714857941236519763482378124695426859173
670000205100050000500702081060080500000007008208000600005010007004076000000403000,673841295182359
746549762381967284513451637928238195674325918467894576132716423859
26300100708000004009200300010007000000600000030020400008010000021000070400000690,263541987587963
124149278365914857236852634719736129458398716542621495873475382691
000000500640800000000609040080917000000020000010060090160702800905000002400005610,391274586642851
973857639241586917324739428165214563798163742859975186432428395617
301050000200000850080000900009300207000000000004007000010045200070308100009700040,391852476247169
853685473912158936724736214589924587631813645297472398165569721348
090560000408010070100900040005000000840000000760090003000030086080005001300070000,297564318458312
679136987542915723864843651927762498153574139286689245731321876495
05349001210000003000200004000900000005107200400000070030501000800040057090000300,753496812148725
```

```
936962318745279854163385167294416239578637581429821943657594672381
00910000230000408006509030000050006000000000400306951020001000900000008506000000,849135762371624
589265798314193452876657819243482376951728941635934567128516283497
00003540040000000000070000250709000006001030090040501002000005305007040000900200,728135496431269
857659784312517398624246571938893642571982413765365827149174956283
000060012061059004500080000100008000420006000950410000302000600690000400005000030,789364512261759
384534281769176528943423976851958413276312847695697135428845692137
92430000061700500005000000000501030030090504002000970060000300001007600005600007,924376815617825
493853149762479581236136792584582463971768214359341957628295638147
00000001420037080060002000000032000006480030008007005054701020000050000000200006,735896214241375
869689124573497532681516489732328617495954761328862953147173248956
00007810600040057000000600802000000948010000600095020206500000004060000050802000,592378146861429
573437156298725684931948213765613795824276531489184967352359842617
300205000000400703600007000020040008007001602000300100000080030040620005000000804,379215486152468
793684937521921546378437891652865372149596184237748623915213759864
705000000000010030210040000005008600301807000000040001600000200000670540000000,795832146468751
293321694587172543869634189725859267431916478352283915674547326918
050690000720001900003070000260400000040200000000100005034010009000650000007030,451698723726341
985893275461267413598514829376938756142685934217379182654142567839
50000000090000340002387000000013000040805900007000800009000051001700000030010082,547691238986523
417123874569265137894418259376379468125892346751651782943734915682
000020580040000026000800000700000010004000350000360002060580030005700160071002000,917426583843175
926526839471732958614694217358158364792469581237285743169371692845
6407500201003000000274000003020000006950000450000000000030001900104000000027950,643758129195362
847827491536312846795769513284584279613278935461956184372431627958
0708000000402008900050002000000006506100070008450000000080027058000600000406001,672894153143275
896895631274239718465561942738784563912416389527358127649927456381
080000000030080201607900000005000007800096000000009096080000071530002000107030,184273956539684
271627951384395418627812796543746325198963842715471539862258167439
0000700090150940080706024000000000500420010000600009006040000000010084000005700,436178529215394
678879652413781469352942531867563827941624783195357916284198245736
0500700049200001000015027000020000004500120300000700800473800008000000003004005,658179324927843
156431562789792385641845691273316427598564738912189256437273914865
000085100000060002000700090000007800087092050540000079176000504002000060050000010,264985137795163
482318724695921357846687492351543618279176839524432571968859246713
90000007400000260080400930000500000002740086008000090700560003040000000506000900,962853174153742
689874619325695187432327495861481326597719568243248931756536274918
9004500000048000201000000080804003000005000203900040001000200400010389700000001,982456713364871
925175329468598742136647135892213968547851693274426517389739284651
2300000000000000002000000140005006700000002050000003600014020007093045006620010500,231864975478951
362956237148385496721769182453142573689514629837893745216627318594
00107800000060000006012300000000008008900030705070600200000030073902800510060029,941578263732694
518865123974127439685689251347354786192296845731473912856518367429
000000045800000090200000800000002000190006000306095000008000039004509108003081200,761928345845163
792239457816457812963192346587386795421518274639624539178973681254
9705080040000790030000008005800040600000052000020009088670000004000000005000480,973518624628479
513154632879581924367796385241432167958867243195249851736315796482
00000000500410900008006090004007060000004629880021000479100005052000000600000000,912837465654129
837387465921245978613173546298869213574791684352528391746436752189
0040000300850200049000060507200000060000040800000800003090006000804702090005080,264591837185327
964973486251728649315659173428341258679837912546516834792492765183
00000000590000004000209000000600000619040502034570010050021030107900000003400600,371284965968135
247542796183785612394619348572234579816456821739127963458893457621
```

```
800000009290006008040030060000800002000000500602150000030009000010280000509004800,867421359293576
418145938267951847632374692581682153794438769125716285943529314876
1605004002004000003500900120000010936003000500000000010900020000050037073600900,168523479297418
365354796812745861293682379154931245786416937528829154637573682941
30604000000790000002000100700003700003900060100000008972006010060010000104302000,396748125517923
864428561397685137249739284651241695738972856413863419572154372986
003400000400097008007500207008000040010029700900700030009000001030005000005000,273481695145269
738869753421732896514481532976596174283357948162614327859928615347
00009000070300080402010000001400602807000910000000093000000090200600070006003400,461398257793265
814528147369914536728375829146682714935837452691249681573156973482
26043000000010000000600000051000006000700001700560209004000720010900304670020100,269435817437819
652185672943851293476926748531743561289394156728512987364678324195
951857196432268574319974813265513629874495768123682431597731952648
30600000805010069000008000701030000500380570000926001008000090000107030000000000,346759128758132
694192486537814397265623815749579264813285643971461978352937521486
3000000200670000080080357040800070300030602000000000501000064000000000756023100,345678921967241
358128935764281597436593864217674312895812759643439186572756423189
0005900039000460000208010000000013000940000808003000003005000008000506062900004, 814592763957346
281623871945245768139379415628186239457731654892498123576562987314
00205008600800000000009400000007500270600909000504001000000000076005006000801,192457386478632
519365819427684291753527364198931785642713528964849176235256943871
00006540040090002000900380000200001986000000901002080036504002000006300000020000,723865491458971
623619243857342658719865719234971432586136584972287196345594327168
06190000200000007047030000020100004000005020504060903050302000006009000030610070,361957482985421
367247836195628193754193745826574268913759382641416579238832614579
000900000003600020060054001040000000000100006204008040805013003000096090003000,247918653519364
872386725419174836925853291764962547381428659137731482596695173248
25097000010400000098000005000080010080005070900600024000000400020000081500740900,256971348134856
297798324165647289513382415679915637824873192456429563781561748932
04000007580000009051009008602570400860800000007000000076002005000406000208000009,946138275832675
491517492386325714968698253147471986523769321854154869732283547619
10000006000002008060007500300106003708090050002503060000080000900050000800000000,152389764937624
185648175923491562837386917542725438691513846279269753418874291356
2400710507059601000000000000000000000000000053010023096000605300000740000000620000,248371659735964
182619582743563897421892146537174235968926753814357418296481629375
000603005000500800090000100600591033050400900000000000080500280000006000030408,178693245432517
869596824317764259183315748692829361754643982571281475936957136428
000061008000000590000290070001000057002600000900400006480709060000080009000026000,397561248126847
593854293671641932857532678914978415326483759162265184739719326485
1003070000308060000000400720100000006070410050000080020060000400000500370208000,125397468437826
951896541372718935246962784135543162897259613784681479523374258619
04000300090081400020009000050000002000008039071000000000009070890045030100000240,647253918953814
762281697453538976124426581397719432586364129875892745631175368249
0000000700100306045800100000703500410090000506000809058900000006009000030007000,623894517971253
468458761932897135624142976385365428791589342176716589243234617859
00000000002001000939020000600060054001090060200204500190800020310300000060050000,871369425426517
389395284716739621548514938672682745931948176253153492867267853194
600270080490000000016403001800000200700000000029300000031040090042076000000002,635271984497583
216821649357189764523376152849542938671268317495913425768754896132
010008700000001000900406800004700008006000000090045890000007170000000046012500, 613928754458673
912729154368561247893984365271237891645895436127172589436346712589
0000900001000005450000300004500609065023047000460030020010000576000004009000000,683195472917342
```

```
865452678391734581629865923147291467538328714956576839214149256783
0201006000005000100008702050000007208000500003200045000700006045000000000600100,825143697973256
841641987523564831972789425316132769458317598264456312789298674135
00000903064000000000004000005000070000028600800005094960007002002580960508060007,251879436649231
758387654129125496873794328615836715294963147582472583961518962347
00004000007000090000091003600400007809000430070065000000090800600000094703065,915347628347826
591286591743621438957859172436473965812732659184568214379194783265
13005000806030250005468000000800020100050040001004096000500010030020000000003000,137459628869312
574254687319748936251693521487512748963975864132381295746426173895
0060308008506070014009000001000000700090000500700000000500900043070008000306007,796135824852647
391431928765164853279289761453375492186617584932543279618928316547
2016400030000080034001090000400000009000600018000020000700200000420079000080004,281649753967532
841345817962724168395539274618618395427493751286856423179172986534
006007010000809470804130060000076500000000007630401000000000098703000451090000,926457318315869
472874132965182976543549381726763245189637524891298713654451698237
0040000000005003005140600080020000110000027600000000680020100700030860000500007,964372518278951
634351486792846297351139845276527613489685729143792134865413568927
2000800360900300005061200900050000006020805080040000030000010008000000021560080,214987536798635
241536124798945316872163278459872459613357892164689741325421563987
435900100070006300900000000004300000010005900000080000090500000000786087010000,435982167178546
329926731458794365812861274593352198674649857231513429786287613945
34200001001000000000000000030830000205000006040700040310050830000000005128650000,342765918817932
456659148273483516729591327684276894531765483192934271865128659347
009000000008007690000730800000314020006080000000009024000000173001200600000000,879156234153824
769462973185986731452524698317317245698245369871738512946691487523
00000805900000000000001600042800000050960004080015200024000500001074020900100080, 216748359498653
712573291648642837195157962834389415276724389561861574923935126487
000010002000004050000007000097000800001090003045008000200070090000980430000000705,478519362963824
157512367984397251846821496573645738219234175698756982431189643725
20007060006000020000000000500068100490100068000007009001000500700020040050740001,215874693869315
427374296815527968134493152768186437259941683572738521946652749381
00700004000050100600000000050810300009040000000680001000000468000300105610005070,137268549942571
836856934217568193724291457683473682951325719468784326195619845372
086300040000000000200640009004080300007000920000002078900108007000060000308000062,786395241149827
653235641789524789316817536924693412578962158437471263895358974162
000600000702000000301004000003200710000001006800700300000010500470000008008520043,954672831782153
964361894275643285719527931486819746352236418597475369128198527643
780009020021004700409000060000400000160000590009612000008169008007020000000000,783659124621384
795459127368972435816316278459548961273235816947864792531197543682
67080042000500070604000700105000060080001000000408095020000600000070090000040100,673851429185492
736942367581359724618826915374714683952297136845461578293538249167
000370020704200080010000300600000000000005000002600700150006032400000060000408050,865371924734259
681219864375681927543347185296592643718158796432473512869926438157
00000650901038000004000038000710409000960504000307060030070040000050000800008000,832416579915387
264746952381267134895189625743453879612328791456671543928594268137
20000001800000100037060000200000000010027039000310000604000009700400283000009007,295347618684921
735371658942467593821158276394923184576846732159719465283532819467
0004007030200000000000000000100240016309517900020600020070100000030096073000050000407,961452783324187
596785369142248716359517938624639524871172645938496873215853291467
000400001009000720100003006406700000090200480000090000609000020134089000000002,628479531349615
728157823946416738259795261483832594617563982174271346895984157362
00300000000900010246000300080009000500013060009000200000060000062084093030100040,913245687857936
412246871359381629574524713968679458231498367125162584793735192846
```

```
000300400004050203080000610000600100300007000560000070000300000084000670500008,156328497794156
283283479615827645139349817526561932874418763952935284761672591348
06800907150740803603010000000000759000650000000004009000060000380000000090083,468539271517428
936239176845846213759792654318351987462985341627173862594624795183
000009005003200008000300000087000500002780049004103000070004300028000000005927004,841679235763251
498259348716187492563632785149594163827976814352428536971315927684
050004970030000000278300004000850007904000000060004000050000003000605060009008,158264973634957
182927831564412685739795413826386792451849526317273148695561379248
8002070000046010700000000000000000904102080007010000370004090800036000000000040,865237194394681
572127495386532876419641923857978154263716542938459368721283719645
000209830020070000050801040000000000100700480097000501473000010000004020001000000,714259836628473
195359861247542618379136795482897342561473526918965184723281937654
000603040005000000600002090406301720030000009700460100105009300000700000000064,791653842825914
673643872591456381729132795486978246315214568937369427158587139264
00030500200900000300198000060025009009800063001000000000087000700000000070159,786345912429761
583351982476647253891298417635513896247965138724174529368832674159
40208065000003490000006030060000000008070009020090300009060002640007800007000090,432789651576134
928891256734963542187158673249724891365319468572645927813287315496
000040000273600000000703050600004001010200540900100026006000300000406000405009000,561842973273695
418849713652682954731317268549954137826796521384138476295425389167
30000000000000602309800306000000901000400008006700090000093170440060000000402090,356214879741896
523298573461835749612924165387167328945682931754419657238573482196
0000008769150003008000039006030001800270000001502000000000000000672009002005010,234591876915867
324876423951693754182427186593158239647749318265581672439362945718
300064000046009000000010007000000830000940070700000001090023168100000390000600000,371264985546789
213982315647624157839813942576759836421497523168165478392238691754
851000004000030000000071000060000070302400004005000000062080100400305480300061,851796234674213
598329548716598637142713824659246951873935162487167489325482375961
361896531247372614589548397612169285734981723456437156928625948173
000000007650400020001005043003620000200000600400010070000008400010000000700002085,348291567657483
129921765843183627954279854631465319278532978416814536792796142385
274927648513794863125862591437153427968279314856638952741415786392
00200060000000000600481050000003070000800040000067001003200004700010530000050100,472935618851726
493639481752285143976167892345394567281513279864728614539946358127
006209001700004009020018574045900007008000000670002080000200100940010000000000,456279831781534
629329618574145982367238746195967153248873425916594361782612897453
301285600000000002070000000000008960010037085003000000002006070050203506000000,391285647485763
921267941538713526489642198375859437162934812756178654293526379814
5000010000800000714000000002000000007009018000000095000079208005803700030014059,592731846683452
971417986523259148367374695182861327495146579238925863714738214659
805604700007000048000020000034000090000003070060090000903080000000463700000900,825614739617593
248349728651134287596958461327276359184492136875581972463763845912
028000000130000090600800702000006000800100003070000240001020006200000030087300900,728915364134672
598695834712513246879842197653976583241351729486269458137487361925
01200400009000004043089200004030029070304000500000070020175000000000000000100370,512674983897531
642436892157145387296723946815968215734281753469379468521654129378
000600000007450600000030072000003806403800050020060035000004040071000002000050,275613489839745
162416829375721456938964138527583297641357962814648571293192384756
4060007092084015000710000088000000040007060000000200610008090000050400000010005,456382719298471
536371695248862153974139746852745928361514839627927564183683217495
31000070400000061200000050000000100673000400045060070062050009050097000400200010,316825794584739
```

C:\Users\maxan\Documents\CP 468 AI\CP468\A2\sudoku_@PP468, Group 3, 2019-11-11, A2 November 11, 2019 13:53 261297641358928574136673912485145368972762153849851497623439286517 000780000084300000100004000010000690040090002002070008900000040700401080000000023, 259786134684319257173524869317842695846195372592673418938267541725431986461958723 00000002700090000300378040901000090679003010040000000600020000007000308900300740,549613827871942 653263785419312458976795236184486179235634827591127594368958361742 000040063020000500006050108000400002009005080300018009000003005002100800090000204,815742963923861 547746359128681497352279635481354218679468923715532174896197586234 05014000040000300007300005000130086000081090000060000080405000005086010000700600,659142378418573 296273698154941357862562814937837269541186435729725986413394721685 50009000000908000608430002000201603006000300000400002003600008000800215200000009,526794183739182 456184365927872916534465273891391458672953621748647839215218547369 100060003004000500080300107000050000000400051000070008020016700060007004073840005, 157264893394781526682395147819653472736428951245179368428516739561937284973842615 0004000050090007000730564010010900000000700600021400060000000010040050000703090,162478935459132 768873956421281695347945387216736214589694521873317849652528763194 007002819001000600000000000000000007082005000073860000500700060000091035100003700,367452819291387 654854916273615234987982175346473869521539748162728691435146523798 03000970000006100090800000000000000063000510100080609000017004705000000841000050,634259781257861 493918734265589146372463972518172385649396517824725498136841623957 0000049104000000502059600000070580009004020085000700400060057900000060000700020,673584912498217 356215963487347158269961432578582679143826345791759821634134796825 03090000100000003090000000080700062000105008200030900060009050901008300500002000,436987521758241 693192653784385794162679125438214836975863419257921578346547362819 00029003010000002000000100030100004058023900000650000002005863040002090003060001,874291635165378 429329546178236189754458723916917654382792415863641832597583967241 000004079506070000070012653002001000000000070000603204010060007000093000000042,213654879586973 214974812653642731598139285467857469321491326785725148936368597142 05009000020000090009060308010003500600790805000070100003005070000000860072000001,753892614268514 937491673285189235476347968152526741398834156729915427863672389541 0050617306034000010129000000900100500000400600005000704503900200000050000070000,945861732673452