# Program-1: Get process ID and Parent process ID

|  |
| --- |
| hw1.c  The program is designed to display the process ID (PID) of the currently running process (referred to as the "child" process) and the PID of its parent process. |
| #include <stdio.h>  #include <sys/types.h>  // Include the POSIX operating system API for using getpid and getppid functions  #include <unistd.h>  int main (void) {  // Declaration of getpid function, which returns the process ID of the calling process  pid\_t getpid();  printf("Child's PID = %d\n", getpid());  // Declaration of getpid function again, which is redundant and unnecessary  pid\_t getpid();  printf("Parent's PID = %d\n", getppid());  // Suspend the program to check the pid and ppid  char c = getchar();  return 0;  } |

|  |  |  |  |
| --- | --- | --- | --- |
| Terminal 1 | | Terminal 2 | |
| $ | ./hw1  Child's PID = 2604  Parent's PID = 2588 | $ | ps ef  PID TTY STAT TIME COMMAND  2588 pts/0 Ss 0:00 -bash USER=beza LOGNAME=beza HOME=/home/beza PATH=/usr/local/sbin:/usr/local/b  2604 pts/0 S+ 0:00 \\_ ./hw1 SHELL=/bin/bash PWD=/home/beza/CS510-APUE/Homework/week06 LOGNAME=be |

# Program-2: fork.c

|  |
| --- |
| ***hw2.c***  The program demonstrates process creation and synchronization using the fork() and wait() system calls. Initially, the parent process creates a child process using fork(). In the child process, the program prints its own PID and its parent's PID. The child process then terminates. Meanwhile, the parent process waits for the child process to complete using wait(). After the child process terminates, the parent process prints its own PID and a message indicating the child's successful completion. This demonstrates basic inter-process communication and process management in a Unix-like operating system. |
| #include <sys/types.h>  #include <unistd.h>  // Include errno library for defining error codes (not used in this program)  #include <errno.h>  extern int errno;  int main(void) {  int pid, status;  // Create a new process (child process) by duplicating the current process  pid = fork();  // Check if fork failed  if (pid == -1) {  printf("Fork failed.\n");  return (1);  }  /\* Child process \*/  // Check if this is the child process  if (pid == 0) {  // Declaration of getpid function, which returns the process ID of the calling process  pid\_t getpid();  // Print the PID of the child process  printf("\n CHILD: Child here with PID = %d.\n", getpid());  // Declaration of getppid function, which returns the PID of the parent process  pid\_t getppid();  // Print the PID of the parent process  printf("CHILD: My Mom has PID = %d.\n", getppid());  return (0);  }  /\* Parent process \*/  // Declaration of wait function, which waits for the child process to finish  pid\_t wait(int \*status);  // suspend the program and observe the system process  char c = getchar();  // Wait for the child process to finish and store its exit status in status  wait(&status);  // Print the PID of the parent process  printf("\n PARENT: Mom here with PID = %d.\n", getpid());  // suspend the program and observe the system process  char c = getchar();  char c = getchar();  // Print a message indicating the child process finished successfully  printf("PARENT: Well done, child!\n\n");  return (0);  } |

|  |  |  |  |
| --- | --- | --- | --- |
| Terminal 1 | | Terminal 2 | |
| $ | ./hw2  CHILD: Child here with PID = 2700.  CHILD: My Mom has PID = 2699.  Suspend  PARENT: Mom here with PID = 2699.  Suspend  PARENT: Well done, child! | $  $ | ps ef  PID TTY STAT TIME COMMAND  2699 pts/0 S+ 0:00 \\_ ./hw2 SHELL=/bin/bash PWD=/home/beza/CS510-APUE/Homework/week06 LOGNAME=be  2700 pts/0 Z+ 0:00 \\_ [hw2] <defunct>    ps ef  PID TTY STAT TIME COMMAND  2699 pts/0 S+ 0:00 \\_ ./hw2 SHELL=/bin/bash PWD=/home/beza/CS510-APUE/Homework/week06 LOGNAME=be |

We can see that in the first suspend, both of the pid numbers for child and parent are print out. However, after the wait(&status); function, only the parent is alive which means that the child process has been terminiated, and the parent collects the exit status of the child process.

# Program-3: Program shown in the following session creates a child process that overwrites itself.

|  |
| --- |
| ***hw3.c***  The program demonstrates basic process creation and synchronization using the fork() and wait() system calls. The parent process creates a child process using fork().In the child process, a message indicating a failure of an exec call (which is not actually attempted) is printed. The parent process prints the PID of the child process and then waits for the child to terminate using wait(). After the child process terminates, the parent process prints a message indicating the child process has terminated, including the PID of the terminated child. |
| #include <stdio.h>  #include <sys/types.h>  #include <unistd.h>  #include <errno.h>  extern int errno;  int main(void) {  int pid, status, e;  // Create a new process (child process) by duplicating the current process  pid = fork();  // Check if fork failed  if (pid == -1) {  printf("Fork failed.\n");  return (1);  }  /\* Child process \*/  // Check if this is the child process  if (pid == 0) {  printf("exec1 failed.\n");  return (1);  }  /\* Parent process \*/  printf("Child PID = %d.\n", (int) pid);  // Declaration of wait function, which waits for the child process to finish  pid\_t wait(int \*status);  // Wait for the child process to finish and store its exit status in status  pid = wait(&status);  // Print a message indicating the child process has terminated along with its PID  printf("Child with PID %d has terminated.\n", (int) pid);  return (0);  } |

|  |  |
| --- | --- |
| $ | ./hw3  Child PID = 2711.  exec1 failed.  Child with PID 2711 has terminated. |

**Why “exec1 failed.” is after “Child PID = 2711.”?**

When fork() is called, the operating system creates a new process (the child process) that is a duplicate of the calling process (the parent process). Both processes continue executing from the point where fork() was called. The return value of fork() differs in each process:

* In the parent process, fork() returns the PID of the child process.
* In the child process, fork() returns 0.

If pid is 0, the code is running in the child process. The child process prints "exec1 failed." and then exits with a status of 1. In the parent process, pid is the PID of the child process. The parent process prints "Child PID = 2711." and then continues to wait for the child process to terminate.

Due to the concurrent execution of the parent and child processes, the exact order of the output can vary. However, typically, the parent process quickly prints the child's PID before the child process can print its message and exit. Therefore, "Child PID = 2711" is printed before "exec1 failed."

# Program-4: Create a zombie process.

A process whose parent is not waiting when it terminates cannot report its termination status to its parent and is called a zombie process

|  |
| --- |
| ***hw4.c***  The program demonstrates the creation of a child process using the fork() system call and illustrates what happens when the parent process does not wait for the child process to terminate. After fork(), both parent and child processes run concurrently. The child process prints its PID and terminates. The parent process prints its PID and then sleeps for 10 seconds without waiting for the child to terminate. As a result, the child process becomes a zombie process because it has terminated, but its exit status has not been collected by the parent. |
| #include <stdio.h>  #include <sys/types.h>  #include <unistd.h>  int main(void) {  int pid;  pid = fork();  if (pid == -1) {  printf("Fork failed.\n");  return(1);  }  /\* Child process \*/  // Check if this is the child process  if (pid == 0) {  // Print the PID of the child process  printf("Child's PID = %d\n", getpid());  return (0);  }  /\* Parent process \*/  // Print the PID of the parent process  printf("Parent's PID = %d\n", getpid());  // Parent process sleeps for 10 seconds  sleep(10);  /\* Parent process does not wait for the child \*/  /\* process and child become a zombie process \*/  return (0);  } |

|  |  |  |  |
| --- | --- | --- | --- |
| $ | /hw4  Parent's PID = 2749  Child's PID = 2750 | $  $ | cat /proc/2749/status  Name: hw4  Umask: 0002  State: S (sleeping)  Tgid: 2749  Ngid: 0  Pid: 2749  PPid: 2588  ……  cat /proc/2750/status  Name: hw4  State: Z (zombie)  Tgid: 2750  Ngid: 0  Pid: 2750  PPid: 2749 |

When the program is sleeping, we can quickly check the process status, and find the results of status for both the parent and the child.

# Program-5: signals.c

Takes programmer defined actions for SIGINT (signal number 2) and SIGALARM (signal number 14). For all other signals, the process takes the system-defined default action.

|  |
| --- |
| ***hw5.c***  This program sets up custom signal handlers for various signals. The nicetry function handles the SIGINT signal by printing a message and reinstalling itself to ensure it continues to handle SIGINT signals. The onalarm function handles the SIGALRM signal by printing the signal number. The program sets an alarm to trigger after 10 seconds and enters an infinite loop, where it repeatedly prints a message and sleeps for 9 seconds. This setup demonstrates basic signal handling in C, ensuring the program cannot be terminated with Ctrl+C and periodically reacting to an alarm signal. |
| #include <sys/signal.h>.  #include <stdio.h>  #define TRUE 1  // Declares a function nicetry that will handle SIGINT.  void nicetry(void);  // Declares a function onalarm that will handle SIGALRM.  void onalarm(int);  int main(void) {  // Ignores the SIGHUP signal.  signal(SIGHUP, SIG\_IGN);  // Sets nicetry as the handler for the SIGINT signal (usually caused by Ctrl+C).  signal(SIGINT, nicetry);  // Sets onalarm as the handler for the SIGALRM signal (caused by an alarm).  signal(SIGALRM, onalarm);  // Schedules an alarm signal to be sent after 2 seconds.  alarm(2);  // Infinite loop to keep the program running.  while (TRUE) {  printf("Waiting for alarm.\n");  // Sleeps for 3 seconds, pausing execution.  sleep(1);  }  }  void nicetry(void) {  // Reinstalls nicetry as the handler for SIGINT.  signal(SIGINT, nicetry);  // Prints a message when SIGINT is received.  printf("Nice try! Sorry you cannot terminate me like this.\n");  }  void onalarm(int signal) {  // Prints a message with the signal number received.  printf("Caught signal number %d. Going back to work.\n", signal);  } |

|  |  |
| --- | --- |
| $ | ./hw5  Waiting for alarm.  ^CNice try! Sorry you cannot terminate me like this.  Waiting for alarm.  Caught signal number 14. Going back to work.  Waiting for alarm.  ^CNice try! Sorry you cannot terminate me like this.  Waiting for alarm.  Waiting for alarm. |

After running the program for 2 second, the alarm, “Caught signal number %d. Going back to work” will arrive. During the process, we cannot use the Ctrl+C to stop the program, and it will indicate that “CNice try! Sorry you cannot terminate me like this.” When we use the Ctrl+C. every 1 second the screen will print out the message “Waiting for alarm.”

# Program-6: killer.c

|  |
| --- |
| ***hw6.c***  This program is designed to send a specified signal to a specified process. It takes two command line arguments: the process ID (PID) and the signal number. The program converts these arguments from strings to integers and attempts to send the specified signal to the process with the given PID using the kill function. If the kill function fails, it prints an error message and exits with an error code. |
| #include <stdio.h>  #include <sys/types.h>  #include <signal.h>  #include <stdlib.h>  int main(int argc, char \*argv[]) {  pid\_t pid;  int signal;  if (argc != 3) {  printf("Inappropriate number of command line arguments. \n");  return(0);  }  // Converts the first command line argument to an integer and stores it in pid.  pid = atoi(argv[1]);  // Converts the second command line argument to an integer and stores it in signal.  signal = atoi(argv[2]);  // Attempts to send the specified signal to the specified process.  if (kill(pid, signal) == -1) {  printf("Kill failed.\n");  return(1);  }  return(0);  } |

|  |  |  |  |
| --- | --- | --- | --- |
| $ | ./hw5  Waiting for alarm.  Waiting for alarm.  Caught signal number 14. Going back to work.  Waiting for alarm.  Waiting for alarm.  Waiting for alarm.  Killed | $ | ps aux | grep "./hw5"  beza 2911 0.0 0.0 2776 1408 pts/2 S+ 23:39 0:00 ./hw5  beza 2960 0.0 0.0 9212 2432 pts/3 S+ 23:40 0:00 grep --color=auto ./hw5 |
| $ | ./hw6 2911 9 |
| $ | ps aux | grep "./hw5"  beza 2963 0.0 0.0 9212 2432 pts/3 S+ 23:40 0:00 grep --color=auto ./hw5 |

We run the homework5 to generate a process that continuously running with pid 2911. Then we use the program hw6 to kill the process 2911. We use the “ps aux” command to check the process status finding that the 2911 is killed after we run program hw6.

# Program-7: dup.c

// Program takes a file as a command line argument, opens the file for writing, and saves the file descriptor for the file in fd.

|  |
| --- |
| ***hw7.c***  This program redirects the standard output to a file specified by a command line argument. It opens the specified file with write-only, create, and truncate options, sets the file permissions to read and write for the owner, and then duplicates the file descriptor to stdout. After redirecting stdout to the file, it closes the original file descriptor to release resources. Finally, it prints "Hello, world!", which is now directed to the specified file instead of the terminal. |
| #include <fcntl.h>  #include <stdio.h>  #include <sys/stat.h>  int main(int argc, char \*argv[]) {  int fd;  /\* Open file \*/  if (argc == 1) { .  printf("No file specified as command line argument. \n");  return(1);  }  // Attempts to open the file specified in the first command line argument with write-only, create, and truncate options.  // Sets the file permissions to read and write for the owner.  if ((fd = open(argv[1], O\_WRONLY | O\_CREAT | O\_TRUNC, S\_IREAD | S\_IWRITE)) == -1) {  printf("File opening failed.\n");  return(1);  }  /\* Close standard output \*/  close(1);  /\* Duplicate fd into file descriptor 1, i.e. stdout \*/  // Duplicates the file descriptor fd to the first available descriptor, which is 1 (stdout).  if (dup(fd) == -1) {  printf("Duplicating file descriptor failed.\n");  return(1);  }  /\* Close fd in order to release the extra slot in the PPFDT \*/  // Closes the original file descriptor to release resources.  if (close(fd) == -1) {  printf("File closing failed.\n");  return(1);  }  /\* Stdout redirected to the file passed as command line argument \*/  // Prints "Hello, world!" which is now redirected to the file.  printf("Hello, world!\n");  return(0);  } |

|  |  |
| --- | --- |
| $  $ | ./hw7 foo1  cat foo1  Hello, world! |

|  |
| --- |
| #include <fcntl.h>  #include <stdio.h>  #include <sys/stat.h>  int main(int argc, char \*argv[]) {  int fd;  /\* Open file \*/  if (argc == 1) {  printf("No file specified as coomand line argument. \n");  return(1);  }  if ((fd = open(argv[1], O\_WRONLY | O\_CREAT | O\_TRUNC, S\_IREAD|S\_IWRITE)) == -1) {  printf("File opening.\n");  return(1);  }  /\* Duplicate fd into file descriptor 1, i.e. stdout \*/  if (dup2(fd,1) == -1) {  printf("Duplicating file descriptor");  return(1);  }  /\* Close fd in order to release the extra slot in the PPFDT \*/  if (close (fd) == -1) {  printf("File closing.\n");  return(1);  }  /\* Stdout redirected to the file passed as command line argument \*/  printf("Hello, world!\n"); |

The primary difference between the two programs lies in how they handle the redirection of the standard output (stdout) to a file specified by a command line argument. The first program uses the `dup` function, which requires explicitly closing the standard output file descriptor (1) before duplicating the file descriptor `fd` to the lowest available file descriptor, which is 1 after it is closed. The second program, however, uses the `dup2` function, which directly duplicates the file descriptor `fd` to file descriptor 1 (stdout), overriding it if necessary without needing to close it first. This makes the second approach more concise and potentially less error-prone. Additionally, the output message in the second program is "Hello, world\n" compared to "Hello, world!\n" in the first program.

.095969999999999800e+01,5.626610000000000156e+01,3.783999999999999808e+00  
3.494299999999999962e+00,4.439800000000000324e+01,4.079429999999999978e+01,5.933679999999999666e+01,4.676010000000000133e+01,3.658509999999999707e+01,7.555509999999999593e+01,3.579279999999999973e+01,8.816769999999999641e+01,9.066559999999999775e+01,7.908790000000000475e+01,5.913159999999999883e+01,4.024210000000000065e+01,9.474700000000000344e+00,1.664979999999999905e+01,3.666559999999999775e+01,9.855729999999999791e+01,9.625090000000000146e+01,4.599819999999999709e+01,4.634150000000000347e+01,8.831220000000000425e+01,2.292620000000000147e+01,7.248770000000000380e+01,9.020069999999999766e+01,8.608350000000000080e+01,9.348690000000000566e+01,1.196419999999999995e+01,1.228860000000000063e+01,1.465390000000000015e+01,8.097599999999999909e+01,8.457100000000000506e+00,6.302980000000000160e+01,7.281579999999999586e+01,1.553030000000000044e+01,1.605369999999999919e+01  
2.322329999999999828e+01,7.033440000000000225e+01,9.184650000000000603e+01,3.696880000000000166e+01,8.270629999999999882e+01,8.390200000000000102e+00,1.677110000000000056e+01,3.965740000000000265e+01,7.516140000000000043e+01,8.966200000000000614e+00,9.358230000000000359e+01,2.787569999999999837e+01,8.554299999999999571e+00,9.075230000000000530e+01,7.495839999999999748e+01,7.336379999999999768e+01,1.120550000000000068e+01,6.972329999999999472e+01,1.184350000000000058e+01,4.291770000000000351e+01,4.598709999999999809e+01,8.014159999999999684e+01,2.364780000000000015e+01,6.115899999999999892e+00,1.920520000000000138e+01,9.226720000000000255e+01,2.671499999999999986e+00,7.135540000000000305e+01,3.793889999999999674e+01,9.351250000000000284e+01,5.870570000000000022e+01,8.127100000000000080e+01,5.021829999999999927e+01,8.096920000000000073e+01,9.390439999999999543e+01  
5.749680000000000035e+01,8.979699999999999704e+01,3.998469999999999658e+01,7.142629999999999768e+01,9.649450000000000216e+01,7.064560000000000173e+01,1.556470000000000020e+01,8.487899999999999778e+00,2.740619999999999834e+01,5.122299999999999898e+01,5.787279999999999802e+01,7.145159999999999911e+01,6.799179999999999779e+01,3.690200000000000102e+01,6.057719999999999771e+01,4.154619999999999891e+01,6.372399999999999842e+00,5.753199999999999648e+00,6.697589999999999577e+01,1.786420000000000030e+01,9.753799999999999670e+01,7.386029999999999518e+01,1.539400000000000102e+00,2.223560000000000159e+01,2.608449999999999847e+01,6.957460000000000377e+01,2.172409999999999997e+01,4.859099999999999753e+00,6.689050000000000296e+01,4.622220000000000084e+01,9.592629999999999768e+01,8.333029999999999404e+01,9.005759999999999366e+01,8.735139999999999816e+01,7.933599999999999852e+01  
7.698969999999999914e+01,7.293030000000000257e+01,2.740499999999999936e+00,8.224899999999999523e+01,1.630260000000000176e+01,5.547090000000000032e+01,6.249199999999999733e+01,4.937899999999999778e+01,1.964460000000000051e+01,2.909759999999999991e+01,3.321790000000000020e+01,2.567099999999999937e+01,6.497270000000000323e+01,9.113639999999999475e+01,4.250130000000000052e+01,1.537449999999999939e+01,3.177929999999999922e+01,8.551510000000000389e+01,1.581160000000000032e+01,7.085930000000000462e+01,8.847509999999999764e+01,7.070529999999999404e+01,3.400769999999999982e+01,9.804590000000000316e+01,2.747999999999999887e-01,4.117750000000000199e+01,1.759450000000000003e+01,4.259069999999999823e+01,5.395709999999999695e+01,4.775000000000000000e+01,2.551650000000000063e+01,9.782510000000000616e+01,4.489580000000000126e+01,9.553730000000000189e+01,3.097899999999999920e+01  
9.549139999999999873e+01,6.539600000000000080e+00,2.676040000000000063e+01,5.768520000000000181e+01,7.793300000000000338e+00,2.676739999999999853e+01,1.187240000000000073e+01,8.573619999999999663e+01,5.338629999999999853e+01,5.685669999999999646e+01,9.871199999999999974e+00,9.899020000000000152e+01,8.071510000000000673e+01,7.102840000000000487e+01,2.349709999999999965e+01,4.825330000000000297e+01,7.994679999999999609e+01,4.167990000000000350e+01,6.459929999999999950e+01,8.398269999999999413e+01,1.215160000000000018e+01,7.948390000000000555e+01,8.468890000000000384e+01,3.916949999999999932e+01,4.826579999999999870e+01,8.931100000000000705e+01,8.917010000000000502e+01,1.321540000000000070e+01,5.208899999999999864e+00,5.329529999999999745e+01,8.665149999999999864e+01,6.786190000000000566e+01,3.337800000000000011e+01,9.195810000000000173e+01,4.130389999999999873e+01  
8.226399999999999579e+01,8.615229999999999677e+01,3.850690000000000168e+01,9.462839999999999918e+01,4.309369999999999834e+01,3.339849999999999852e+01,6.890030000000000143e+01,8.243439999999999657e+01,7.167610000000000525e+01,3.263559999999999661e+01,5.930440000000000111e+01,8.098090000000000543e+01,7.780329999999999302e+01,3.812199999999999811e+00,8.100320000000000675e+01,1.980270000000000152e+01,9.017319999999999425e+01,4.555490000000000350e+01,8.260410000000000252e+01,5.543059999999999832e+01,8.347839999999999350e+01,4.962089999999999890e+01,1.152640000000000065e+01,4.452999999999999736e-01,4.772499999999999964e+00,2.867799999999999905e+00,2.938889999999999958e+01,1.892889999999999873e+01,6.862789999999999679e+01,4.082560000000000144e+01,9.391870000000000118e+01,6.014110000000000156e+01,7.276890000000000214e+01,4.682710000000000150e+01,8.176649999999999352e+01  
3.990879999999999939e+01,8.347140000000000271e+01,1.689829999999999899e+01,1.805349999999999966e+01,1.021610000000000085e+01,6.390079999999999671e+01,3.459279999999999688e+01,4.124849999999999994e+01,2.019529999999999959e+01,5.930389999999999873e+01,6.664830000000000609e+01,6.434470000000000312e+01,9.056040000000000134e+01,7.350020000000000664e+01,3.953699999999999903e+01,9.504290000000000305e+01,1.000270000000000081e+01,3.099230000000000018e+01,1.830659999999999954e+01,8.615189999999999770e+01,9.552490000000000236e+01,3.137219999999999942e+01,7.768319999999999936e+01,5.188719999999999999e+01,8.288219999999999743e+01,9.552370000000000516e+01,6.637949999999999307e+01,8.454059999999999775e+01,4.231490000000000151e+01,8.459159999999999968e+01,9.647119999999999607e+01,9.061010000000000275e+01,1.458590000000000053e+01,7.422549999999999670e+01,6.150339999999999918e+01  
8.900560000000000116e+01,4.587339999999999662e+01,3.783559999999999945e+01,5.136809999999999832e+01,1.340109999999999957e+01,4.795709999999999695e+01,3.848649999999999949e+01,9.173959999999999582e+01,4.167869999999999919e+01,1.971859999999999857e+01,5.074110000000000298e+01,3.319930000000000092e+01,5.109389999999999787e+01,8.627299999999999613e+01,5.988870000000000005e+01,7.581800000000000317e+00,8.916849999999999454e+01,3.620859999999999701e+01,8.211579999999999302e+01,7.907290000000000418e+01,7.443349999999999511e+01,1.675339999999999918e+01,6.833360000000000412e+01,6.495229999999999393e+01,4.066049999999999898e+01,7.447039999999999793e+01,3.617340000000000089e+01,2.484599999999999920e+00,1.806929999999999836e+01,1.687500000000000000e+00,2.178859999999999886e+01,3.923570000000000135e+01,2.621669999999999945e+01,6.621089999999999520e+01,4.813430000000000319e+01  
6.314499999999999780e+00,9.464570000000000505e+01,4.141190000000000282e+01,8.136579999999999302e+01,4.361480000000000246e+01,7.365189999999999770e+01,5.148689999999999856e+01,2.879759999999999920e+01,9.554240000000000066e+01,8.202110000000000412e+01,5.699960000000000093e+01,7.501260000000000616e+01,8.667600000000000193e+00,6.799479999999999791e+01,3.231329999999999814e+01,7.598420000000000130e+01,7.586360000000000525e+01,5.129100000000000215e+00,5.934120000000000061e+01,3.390489999999999782e+01,6.563899999999999579e+01,3.597000000000000197e-01,1.005039999999999978e+01,7.512199999999999989e+01,4.501290000000000191e+01,4.296000000000000085e+01,1.316070000000000029e+01,7.940370000000000061e+01,2.911339999999999861e+01,4.437539999999999907e+01,8.087839999999999918e+01,2.132809999999999917e+01,1.933790000000000120e+01,2.911720000000000041e+01,3.518229999999999791e+01  
2.621599999999999930e+00,6.674190000000000111e+01,7.676080000000000325e+01,4.708729999999999905e+01,3.412969999999999970e+01,3.688600000000000101e+00,5.410699999999999932e+01,9.219790000000000418e+01,4.428899999999999615e+00,4.598720000000000141e+01,6.969920000000000471e+01,7.319190000000000396e+01,8.602379999999999427e+01,2.191440000000000055e+01,4.939500000000000313e+01,4.155570000000000164e+01,8.287619999999999720e+01,8.702479999999999905e+01,2.921440000000000126e+01,9.296819999999999595e+01,8.802740000000000009e+01,1.763500000000000156e+01,7.629000000000000226e-01,5.008910000000000196e+01,8.467510000000000048e+01,1.620349999999999824e+01,4.195499999999999829e+01,3.035379999999999967e+01,8.893349999999999511e+01,8.958520000000000039e+01,5.377890000000000015e+01,2.743250000000000099e+01,3.197309999999999874e+01,1.965660000000000096e+01,3.475820000000000221e+01  
3.927420000000000044e+01,4.842110000000000269e+01,7.200549999999999784e+01,3.033289999999999864e+01,2.457300000000000040e+00,6.792189999999999372e+01,2.565769999999999840e+01,9.718789999999999907e+01,4.251180000000000092e+01,8.849819999999999709e+01,6.804659999999999798e+01,7.124429999999999552e+01,9.244429999999999836e+01,2.439819999999999922e+01,4.564479999999999649e+01,5.152159999999999940e+01,9.627030000000000598e+01,8.158939999999999770e+01,9.752760000000000673e+01,3.431099999999999817e+00,5.193529999999999802e+01,1.800600000000000023e+01,6.045020000000000238e+01,2.053219999999999956e+01,5.256280000000000285e+01,9.850560000000000116e+01,2.885660000000000025e+01,9.023609999999999332e+01,4.087879999999999825e+01,4.896800000000000352e+01,2.243049999999999855e+01,1.232719999999999949e+01,8.891400000000000858e+00,7.878459999999999752e+01,9.184069999999999823e+01  
5.422500000000000142e+01,9.417409999999999570e+01,5.920929999999999893e+01,5.569360000000000355e+01,4.946549999999999869e+01,8.795199999999999818e+01,9.439069999999999538e+01,8.680039999999999623e+01,9.442799999999999727e+01,9.883669999999999334e+01,2.389890000000000114e+01,5.825549999999999784e+01,9.731719999999999970e+01,1.600690000000000168e+01,2.453089999999999904e+01,9.266700000000000159e+00,3.635490000000000066e+01,4.775679999999999836e+01,2.344300000000000139e+01,8.504640000000000555e+01,2.504179999999999851e+01,8.101890000000000214e+01,6.681350000000000477e+01,2.023699999999999832e+00,4.603340000000000032e+01,8.101949999999999363e+01,1.569420000000000037e+01,1.240109999999999957e+01,8.088800000000000878e+00,7.403560000000000230e+01,6.679389999999999361e+01,7.808979999999999677e+01,2.685879999999999868e+01,3.794839999999999947e+01,7.592140000000000555e+01  
4.971329999999999671e+01,2.043779999999999930e+01,2.314450000000000074e+01,6.871689999999999543e+01,1.903099999999999881e+01,4.760410000000000252e+01,9.273940000000000339e+01,3.984040000000000248e+01,5.421289999999999765e+01,8.803789999999999338e+01,3.476939999999999742e+01,3.110500000000000043e+01,7.187369999999999948e+01,1.116000000000000048e-01,6.291800000000000281e+00,1.371780000000000044e+01,5.882889999999999731e+01,5.385889999999999844e+01,9.827779999999999916e+01,5.916740000000000066e+01,6.104699999999999704e+01,4.406299999999999883e+00,1.927499999999999858e+01,1.832239999999999824e+01,9.877989999999999782e+01,3.453100000000000058e+00,7.177580000000000382e+01,3.860770000000000124e+01,2.439839999999999876e+01,5.997270000000000323e+01,7.680780000000000030e+01,3.511789999999999878e+01,3.670239999999999725e+01,7.163809999999999434e+01,9.731709999999999638e+01  
4.270000000000000184e-02,9.847939999999999827e+01,2.369249999999999901e+01,7.910769999999999413e+01,2.907229999999999848e+01,2.506690000000000040e+01,2.873300000000000054e+01,3.967560000000000286e+01,4.349750000000000227e+01,1.974520000000000053e+01,8.996059999999999945e+01,4.145600000000000307e+01,3.819129999999999825e+01,5.002499999999999858e+01,7.850149999999999295e+01,7.310750000000000171e+01,9.543689999999999429e+01,7.812940000000000396e+01,4.428730000000000189e+01,7.394199999999999662e+00,2.745250000000000057e+01,7.982769999999999300e+01,6.383480000000000132e+01,3.972899999999999920e+01,2.026510000000000034e+01,1.636769999999999925e+01,8.938370000000000459e+01,3.344449999999999790e+01,2.065999999999999837e+00,6.719580000000000553e+01,2.807819999999999894e+01,1.761400000000000077e+01,9.402570000000000050e+01,2.191819999999999879e+01,5.359740000000000038e+01  
8.191989999999999839e+01,6.707810000000000628e+01,4.857889999999999731e+01,3.126559999999999917e+01,3.844870000000000232e+01,8.439929999999999666e+01,6.676300000000000345e+00,7.479519999999999413e+01,7.024630000000000507e+01,7.459829999999999472e+01,8.984329999999999927e+01,1.639120000000000132e+01,7.081459999999999866e+01,2.338759999999999906e+01,6.973550000000000182e+01,6.030570000000000164e+01,7.764889999999999759e+01,3.394879999999999853e+01,8.767820000000000391e+01,5.024790000000000134e+01,3.694399999999999906e+00,6.275280000000000058e+01,7.286889999999999645e+01,2.403099999999999881e+01,7.073279999999999745e+01,3.736290000000000333e+01,9.491930000000000689e+01,6.575509999999999877e+01,9.315400000000000347e+00,6.695959999999999468e+01,7.056770000000000209e+01,2.216029999999999944e+01,8.468139999999999645e+01,3.625909999999999656e+01,9.004170000000000584e+01  
7.064480000000000359e+01,2.525949999999999918e+01,5.692510000000000048e+01,3.816800000000000193e+00,5.503410000000000224e+01,1.998949999999999960e+01,1.095350000000000001e+01,2.869359999999999999e+01,2.466209999999999880e+01,2.391029999999999944e+01,8.757040000000000646e+01,8.100799999999999557e+00,9.001160000000000139e+01,3.191300000000000026e+00,4.284170000000000300e+01,5.123100000000000165e+01,8.317810000000000059e+01,1.629710000000000036e+01,9.102039999999999509e+01,7.479699999999999704e+01,1.133230000000000004e+01,1.911530000000000129e+01,5.737349999999999994e+01,5.696730000000000160e+01,5.842620000000000147e+01,4.577300000000000146e+00,6.174629999999999797e+01,4.889999999999999858e+01,2.480829999999999913e+01,2.719599999999999795e+00,6.516179999999999950e+01,5.083350000000000080e+01,4.174600000000000222e+01,1.534169999999999945e+01,5.313219999999999743e+01  
3.053109999999999857e+01,7.462059999999999604e+01,1.316029999999999944e+01,9.573399999999999466e+00,1.347699999999999898e+00,8.106589999999999918e+01,1.804060000000000130e+01,4.046809999999999974e+01,7.943080000000000496e+01,1.746399999999999952e+00,1.229920000000000080e+01,5.814560000000000173e+01,9.176019999999999754e+01,5.134120000000000061e+01,3.206009999999999849e+01,9.205750000000000455e+01,7.357970000000000255e+01,3.816080000000000183e+01,2.204360000000000142e+01,3.203719999999999857e+01,9.505150000000000432e+01,1.215160000000000018e+01,6.369500000000000028e+01,6.320490000000000208e+01,5.581419999999999959e+01,7.573680000000000234e+01,8.421400000000000219e+00,7.547769999999999868e+01,4.771050000000000324e+01,3.457999999999999829e+01,8.666729999999999734e+01,2.945200000000000173e+01,5.084720000000000084e+01,7.774720000000000653e+01,9.297329999999999472e+01  
4.690999999999999659e+01,3.448169999999999646e+01,5.203569999999999851e+01,2.263129999999999953e+01,2.254469999999999885e+01,8.067390000000000327e+01,4.490619999999999834e+01,8.892400000000000659e+01,9.660649999999999693e+01,4.065310000000000201e+01,6.855079999999999529e+01,8.700690000000000168e+01,3.808709999999999951e+01,3.571580000000000155e+01,7.352139999999999986e+01,3.243229999999999791e+01,3.410400000000000098e+00,6.142390000000000327e+01,3.380969999999999942e+01,1.897800000000000153e+01,1.917439999999999856e+01,9.592709999999999582e+01,9.486920000000000641e+01,8.866729999999999734e+01,2.305270000000000152e+01,5.379549999999999699e+01,7.058320000000000505e+01,7.929850000000000421e+01,6.675000000000000000e+01,8.133169999999999789e+01,3.993019999999999925e+01,7.486929999999999552e+01,2.231869999999999976e+01,3.155959999999999965e+01,4.852089999999999748e+01  
5.691360000000000241e+01,6.631459999999999866e+01,9.346959999999999980e+01,4.096940000000000026e+01,6.984050000000000580e+01,9.047939999999999827e+01,4.632200000000000273e+01,5.055080000000000240e+01,4.636240000000000094e+01,9.163970000000000482e+01,2.221099999999999852e+01,8.086339999999999861e+01,8.918389999999999418e+01,3.605669999999999931e+01,2.392089999999999961e+01,9.779290000000000305e+01,9.071219999999999573e+01,4.008870000000000289e+01,7.677729999999999677e+01,1.116039999999999921e+01,5.710399999999999920e+00,1.510519999999999996e+01,9.275169999999999959e+01,6.107150000000000034e+01,9.248189999999999600e+01,1.056719999999999970e+01,4.553159999999999741e+01,3.163070000000000093e+01,2.518140000000000001e+01,6.508899999999999864e+01,1.517089999999999961e+01,2.596399999999999864e+01,5.241600000000000037e+00,6.644740000000000180e+01,6.027850000000000108e+01  
6.697669999999999391e+01,4.175030000000000285e+01,4.886540000000000106e+01,5.347900000000000098e+00,4.012169999999999703e+01,2.805000000000000271e-01,1.868070000000000164e+01,4.462299999999999933e+00,1.721000000000000085e+00,5.084299999999999820e+00,6.681699999999999307e+01,1.718939999999999912e+01,7.192820000000000391e+01,5.805700000000000216e+01,8.693919999999999959e+01,8.677799999999999514e+00,9.621339999999999293e+01,2.004000000000000004e+00,9.358660000000000423e+01,3.986599999999999966e+01,6.524830000000000041e+01,7.134139999999999304e+01,3.951039999999999708e+01,6.910920000000000130e+01,9.805530000000000257e+01,1.304850000000000065e+01,7.030719999999999459e+01,5.037899999999999778e+01,4.822339999999999804e+01,4.556700000000000017e+01,3.844659999999999656e+01,3.112740000000000151e+01,9.637130000000000507e+01,9.556289999999999907e+01,2.275580000000000069e+01  
4.002600000000000158e+00,3.928309999999999746e+01,7.891360000000000241e+01,3.367779999999999774e+01,6.953029999999999688e+01,5.767210000000000036e+01,9.883299999999999841e+01,4.224860000000000326e+01,1.923310000000000031e+01,7.136039999999999850e+01,5.698629999999999995e+01,3.810690000000000310e+01,9.584489999999999554e+01,6.085679999999999978e+01,7.347669999999999391e+01,8.913120000000000687e+01,3.247710000000000008e+01,4.931819999999999737e+01,3.076320000000000121e+01,8.917090000000000316e+01,2.398310000000000031e+01,4.172180000000000177e+01,5.429959999999999809e+01,7.714199999999999946e+00,8.794689999999999941e+01,4.509270000000000067e+01,3.265659999999999741e+01,4.761800000000000033e+00,7.344849999999999568e+01,7.493400000000000283e+00,5.301180000000000092e+01,8.973699999999999477e+01,6.651959999999999695e+01,3.251650000000000063e+01,8.548470000000000368e+01  
6.670640000000000214e+01,1.303040000000000020e+01,2.969819999999999993e+01,2.585199999999999942e+00,6.404279999999999973e+01,2.723260000000000147e+01,9.530939999999999657e+01,1.677260000000000062e+01,4.934629999999999939e+01,1.117699999999999960e+01,2.996330000000000027e+01,3.221130000000000138e+01,2.434979999999999833e+01,4.949399999999999977e+01,6.389600000000000080e+01,3.062150000000000105e+01,6.757930000000000348e+01,2.820880000000000010e+01,6.334699999999999775e+00,7.542399999999999771e+00,5.708070000000000022e+01,1.388200000000000101e+00,1.757499999999999929e+01,9.173829999999999529e+01,1.151030000000000086e+01,7.274299999999999500e+01,8.680150000000000432e+01,4.051180000000000092e+01,7.129930000000000234e+01,7.798139999999999361e+01,5.761440000000000339e+01,4.686520000000000152e+01,8.524569999999999936e+01,4.234700000000000131e+01,7.165210000000000434e+01  
5.835269999999999868e+01,9.442950000000000443e+01,7.538830000000000098e+01,5.972760000000000247e+01,8.227700000000000102e+01,7.921750000000000114e+01,3.775569999999999737e+01,4.302689999999999770e+01,9.236190000000000566e+01,1.208389999999999986e+01,9.852870000000000061e+01,7.572499999999999787e+00,8.750020000000000664e+01,9.113590000000000657e+01,4.223319999999999652e+01,8.886459999999999582e+01,5.558729999999999905e+01,3.004289999999999949e+01,8.179970000000000141e+01,3.646170000000000044e+01,8.356860000000000355e+01,8.727499999999999147e+00,3.600809999999999889e+01,7.898799999999999599e+00,4.438430000000000319e+01,4.406459999999999866e+01,5.119030000000000058e+01,6.454300000000000637e+01,2.910190000000000055e+01,7.080570000000000164e+01,3.707829999999999870e+01,9.457800000000000296e+01,2.409829999999999828e+01,4.478799999999999670e+01,1.201069999999999993e+01  
9.790590000000000259e+01,9.276269999999999527e+01,8.691989999999999839e+01,2.987719999999999843e+01,9.113070000000000448e+01,5.483570000000000277e+01,1.208750000000000036e+01,1.304579999999999984e+01,7.006910000000000593e+01,6.906399999999999650e+00,1.766359999999999886e+01,4.790760000000000218e+01,7.076640000000000441e+01,1.141230000000000011e+01,2.166720000000000113e+01,8.412539999999999907e+01,2.680140000000000100e+01,5.725200000000000067e+00,1.366189999999999927e+01,6.769999999999999574e+00,3.298680000000000234e+01,3.537599999999999767e+01,8.290949999999999420e+01,7.436409999999999343e+01,8.430759999999999366e+01,6.395699999999999719e+00,6.772530000000000427e+01,2.430659999999999954e+01,8.703170000000000073e+01,4.005599999999999739e+01,8.715300000000000580e+01,3.611599999999999966e+01,9.258450000000000557e+01,8.946689999999999543e+01,7.418309999999999604e+01  
8.197920000000000584e+01,2.770100000000000051e+01,3.673000000000000154e-01,6.125200000000000422e+00,8.418609999999999616e+01,1.692480000000000118e+01,7.996490000000000009e+01,9.278669999999999618e+01,7.809300000000000352e+00,1.541830000000000034e+01,3.314700000000000202e+00,4.437559999999999860e+01,2.421559999999999846e+01,1.047450000000000081e+01,6.712120000000000175e+01,1.616019999999999968e+01,3.416709999999999781e+01,4.086599999999999788e+00,8.461329999999999529e+01,9.773680000000000234e+01,3.877750000000000341e+01,5.734420000000000073e+01,9.471729999999999450e+01,8.725180000000000291e+01,5.514569999999999794e+01,7.154590000000000316e+01,6.491500000000000625e+01,5.323380000000000223e+01,3.430149999999999721e+01,6.445269999999999300e+01,9.484269999999999357e+01,9.629110000000000014e+01,1.968690000000000140e+01,6.115160000000000196e+01,6.205630000000000024e+01  
6.145839999999999748e+01,4.312780000000000058e+01,5.991799999999999926e+01,9.179290000000000305e+01,6.865890000000000271e+01,7.290499999999999758e+00,3.003000000000000114e+01,9.652280000000000371e+01,6.276939999999999742e+01,4.197370000000000090e+01,2.701139999999999830e+01,5.668180000000000263e+01,3.401380000000000337e+01,1.264399999999999968e+00,9.139390000000000214e+01,1.858729999999999905e+01,4.431060000000000088e+01,5.722440000000000282e+01,1.998089999999999833e+01,1.704579999999999984e+01,3.395839999999999748e+01,9.163240000000000407e+01,7.442600000000000193e+01,1.270589999999999975e+01,6.188870000000000005e+01,1.259580000000000055e+01,8.232810000000000628e+01,2.246920000000000073e+01,6.342249999999999943e+01,1.403000000000000080e-01,6.124770000000000181e+01,5.220499999999999829e+01,7.210939999999999372e+01,8.338930000000000575e+01,3.878949999999999676e+01  
1.282610000000000028e+01,9.747979999999999734e+01,3.988980000000000103e+01,8.588349999999999795e+01,1.795970000000000155e+01,4.027980000000000160e+01,8.682160000000000366e+01,8.800360000000000582e+01,2.148120000000000118e+01,6.463100000000000023e+01,6.217560000000000286e+01,2.739859999999999829e+01,1.042800000000000082e+01,1.744239999999999924e+01,1.739519999999999911e+01,7.632319999999999993e+01,8.957439999999999714e+01,3.102479999999999905e+01,5.062100000000000222e+01,4.539390000000000214e+01,7.640720000000000312e+01,9.547369999999999379e+01,5.385669999999999646e+01,9.676099999999999568e+01,6.788259999999999650e+01,7.445220000000000482e+01,2.000949999999999918e+01,7.942610000000000525e+01,6.846899999999999409e+01,6.436010000000000275e+01,3.961119999999999663e+01,7.025700000000000500e+01,7.432789999999999964e+01,7.051489999999999725e+01,6.082050000000000267e+01  
1.302549999999999919e+01,4.848870000000000147e+01,8.710850000000000648e+01,7.299299999999999500e+01,8.179099999999999682e+01,3.062209999999999965e+01,6.871810000000000684e+01,2.231919999999999860e+01,2.615400000000000169e+00,8.155949999999999989e+01,6.631180000000000518e+01,2.066369999999999862e+01,5.069069999999999965e+01,2.723939999999999984e+01,9.851009999999999422e+01,2.216009999999999991e+01,2.809420000000000073e+01,1.710160000000000124e+01,8.385909999999999798e+01,4.069169999999999732e+01,6.721850000000000591e+01,5.412099999999999689e+00,6.442849999999999966e+01,7.207959999999999923e+01,7.639109999999999445e+01,1.143929999999999936e+01,6.440240000000000009e+01,7.384810000000000230e+01,8.630800000000000693e+01,5.396699999999999875e+01,4.752570000000000050e+01,3.026279999999999859e+01,7.081229999999999336e+01,8.928440000000000509e+01,3.531620000000000203e+01  
5.818800000000000416e+00,9.535290000000000532e+01,9.160080000000000666e+01,2.281289999999999907e+01,6.721569999999999823e+01,9.242610000000000525e+01,2.895489999999999853e+01,4.562319999999999709e+01,8.844530000000000314e+01,7.119419999999999504e+01,6.932330000000000325e+01,2.010970000000000013e+01,7.581699999999999662e+00,3.242940000000000111e+01,7.673919999999999675e+01,2.532910000000000039e+01,2.453960000000000008e+01,5.959770000000000323e+01,9.162789999999999679e+01,3.003040000000000020e+01,2.125989999999999824e+01,9.273969999999999914e+01,7.300140000000000384e+01,6.848130000000000450e+01,1.771389999999999887e+01,8.561799999999999855e+00,6.516030000000000655e+01,9.643019999999999925e+01,2.407679999999999865e+01,7.957380000000000564e+01,7.862090000000000600e+01,7.219880000000000564e+01,4.585900000000000176e+01,3.694239999999999924e+01,6.572530000000000427e+01  
3.367549999999999955e+01,7.791379999999999484e+01,9.615550000000000352e+01,4.286059999999999803e+01,1.968880000000000052e+01,3.101510000000000034e+01,3.492199999999999971e+00,7.245130000000000337e+01,6.452190000000000225e+01,8.788779999999999859e+01,3.110180000000000078e+01,6.807649999999999579e+01,7.960099999999999731e+00,7.919899999999999807e+01,6.455339999999999634e+01,1.758620000000000161e+01,1.803790000000000049e+01,1.276899999999999924e+00,1.612800000000000011e+00,7.886289999999999623e+01,6.383149999999999835e+01,5.573020000000000351e+01,5.618549999999999756e+01,6.016660000000000252e+01,4.650999999999999801e+01,6.784350000000000591e+01,4.643719999999999715e+01,1.087979999999999947e+01,9.434260000000000446e+01,2.745949999999999847e+01,6.178700000000000081e+00,4.482070000000000221e+01,4.836440000000000339e+01,7.679139999999999588e+01,4.281200000000000117e+00  
4.693439999999999657e+01,5.821860000000000213e+01,2.782789999999999964e+01,7.548059999999999548e+01,7.969249999999999545e+01,2.264310000000000045e+01,1.318919999999999959e+01,3.974219999999999686e+01,1.287330000000000041e+01,3.104899999999999949e+01,3.687489999999999668e+01,3.114900000000000091e+01,9.775480000000000302e+01,3.241210000000000235e+01,4.733389999999999986e+01,4.478260000000000218e+01,8.353270000000000550e+01,5.315900000000000070e+00,2.835259999999999891e+01,9.619060000000000343e+01,5.824499999999999744e+01,2.968680000000000163e+01,1.420470000000000077e+01,8.002309999999999945e+01,6.562050000000000693e+01,6.788859999999999673e+01,3.292119999999999891e+01,2.494140000000000157e+01,9.717629999999999768e+01,8.772969999999999402e+01,7.511990000000000123e+01,3.197510000000000119e+01,5.304399999999999693e+01,6.558010000000000161e+01,9.321590000000000487e+01  
2.276000000000000156e+01,4.840350000000000108e+01,5.239829999999999899e+01,4.809819999999999851e+01,4.676330000000000098e+01,4.140670000000000073e+01,1.783599999999999852e+01,7.880289999999999395e+01,7.385920000000000130e+01,3.043309999999999960e+01,1.423409999999999975e+01,5.157469999999999999e+01,2.370990000000000109e+01,2.780709999999999837e+01,8.243129999999999313e+01,5.438170000000000215e+01,7.376160000000000139e+01,7.758010000000000161e+01,2.290360000000000085e+01,8.499559999999999604e+01,7.585450000000000159e+01,6.128589999999999804e+01,9.028910000000000480e+01,8.378239999999999554e+01,5.595660000000000167e+01,9.437999999999999545e+01,6.305469999999999686e+01,6.512160000000000082e+01,2.681810000000000116e+01,7.298350000000000648e+01,3.886480000000000246e+01,8.636469999999999914e+01,7.465720000000000312e+01,5.016949999999999932e+01,7.904019999999999868e+01  
1.728729999999999833e+01,5.982050000000000267e+01,6.209699999999999775e+00,1.530899999999999928e+00,9.652559999999999718e+01,4.568180000000000263e+01,3.775099999999999767e+01,8.136010000000000275e+01,5.675520000000000209e+01,4.701570000000000249e+01,5.646759999999999735e+01,6.060260000000000247e+01,9.703839999999999577e+01,2.073460000000000036e+01,5.464730000000000132e+01,3.405290000000000106e+01,4.318780000000000285e+01,3.918430000000000035e+01,1.818899999999999961e+00,7.587990000000000634e+01,9.799930000000000518e+01,3.999029999999999774e+01,1.440949999999999953e+01,2.263380000000000081e+01,9.845000000000000284e+01,8.924550000000000693e+01,3.713400000000000034e+01,4.260399999999999743e+00,8.712940000000000396e+01,3.619519999999999982e+01,4.918739999999999668e+01,9.700039999999999907e+01,4.545499999999999652e+00,8.495140000000000668e+01,7.440199999999999925e+00  
1.221429999999999971e+01,6.789000000000000057e+01,8.190250000000000341e+01,8.445459999999999923e+01,2.857649999999999935e+01,2.532420000000000115e+01,2.681869999999999976e+01,4.335540000000000305e+01,8.733069999999999311e+01,8.747310000000000230e+01,3.329590000000000316e+01,2.996100000000000207e+00,8.717200000000000060e+00,2.645759999999999934e+01,1.193290000000000006e+01,6.492029999999999745e+01,9.885569999999999879e+01,5.874730000000000274e+01,2.695189999999999841e+01,9.854670000000000130e+01,1.713109999999999999e+01,1.759500000000000064e+00,8.705570000000000164e+01,2.222139999999999915e+01,9.547360000000000468e+01,6.495149999999999579e+01,8.176760000000000161e+01,2.485099999999999909e+01,5.685009999999999764e+01,2.072889999999999944e+01,8.294060000000000343e+01,2.382400000000000073e+00,3.026529999999999987e+01,2.800479999999999947e+01,1.864000000000000101e+00  
9.501699999999999591e+01,8.337400000000000588e+00,5.446260000000000190e+01,7.498699999999999477e+01,9.683500000000000441e+00,3.825370000000000203e+01,5.782229999999999848e+01,6.679460000000000264e+01,1.798339999999999961e+01,9.189879999999999427e+01,9.019240000000000634e+01,1.017800000000000082e+01,9.717610000000000525e+01,4.019089999999999918e+01,2.517279999999999873e+01,4.936919999999999931e+01,4.552699999999999747e+00,4.656539999999999679e+01,3.012750000000000128e+01,9.490200000000000102e+01,9.679999999999999716e-01,7.186719999999999686e+01,7.601690000000000680e+01,6.243540000000000134e+01,6.354339999999999833e+01,5.629500000000000171e+01,5.390900000000000247e+00,4.109600000000000364e+00,9.065540000000000020e+01,1.367789999999999928e+01,9.286060000000000514e+01,1.991049999999999898e+01,3.958899999999999864e+00,5.193730000000000047e+01,3.107600000000000140e+00  
1.503989999999999938e+01,5.890370000000000061e+01,1.561180000000000057e+01,6.483549999999999613e+01,2.957900000000000063e+01,5.349210000000000065e+01,2.049040000000000106e+01,4.936399999999999899e+00,7.594339999999999691e+01,4.565189999999999770e+01,4.518099999999999561e+00,4.454899999999999949e+01,1.538279999999999959e+01,6.360079999999999956e+01,8.430339999999999634e+01,4.985370000000000346e+01,6.809120000000000061e+01,3.671600000000000108e+01,3.887740000000000151e+01,5.363870000000000005e+01,7.226149999999999807e+01,6.902609999999999957e+01,8.445430000000000348e+01,1.182300000000000040e+01,4.400249999999999773e+01,2.309199999999999875e+01,1.178529999999999944e+01,9.449250000000000682e+01,8.818340000000000600e+01,7.365899999999999892e+00,1.989200000000000079e+00,5.668030000000000257e+01,4.133350000000000080e+01,9.790699999999999292e+00,7.018110000000000070e+01  
3.436299999999999955e+01,4.574799999999999756e+00,6.739190000000000680e+01,3.552600000000000335e+01,5.421320000000000050e+01,4.792329999999999757e+01,4.533330000000000126e+01,8.108939999999999770e+01,8.917709999999999582e+01,9.856419999999999959e+01,6.390959999999999752e+01,9.256090000000000373e+01,4.170230000000000103e+01,6.386679999999999779e+01,4.430680000000000263e+01,8.151170000000000471e+01,7.331029999999999802e+01,7.671110000000000184e+01,4.516369999999999862e+01,6.114719999999999800e+01,1.829810000000000159e+01,3.229379999999999740e+01,1.824930000000000163e+01,5.264999999999999680e+00,1.682150000000000034e+01,5.231009999999999849e+01,6.979869999999999663e+01,9.173640000000000327e+01,7.476080000000000325e+01,3.780689999999999884e+01,7.989929999999999666e+01,7.985809999999999320e+01,5.918030000000000257e+01,1.879530000000000101e+01,2.785089999999999932e+01  
8.716859999999999786e+01,3.960479999999999734e+01,8.397679999999999723e+01,8.310410000000000252e+01,7.725920000000000698e+01,8.736050000000000182e+01,2.610229999999999961e+01,1.714560000000000173e+01,8.867860000000000298e+01,9.627039999999999509e+01,2.082319999999999993e+01,4.649450000000000216e+01,2.937120000000000175e+01,7.382170000000000698e+01,3.311399999999999899e+00,3.764779999999999660e+01,2.307479999999999976e+01,7.243410000000000082e+01,4.082469999999999999e+01,5.286919999999999931e+01,3.122749999999999915e+01,5.053479999999999706e+01,6.000390000000000157e+01,7.649909999999999854e+01,5.200160000000000338e+01,4.791210000000000235e+01,1.050399999999999956e+01,9.088479999999999848e+01,3.090830000000000055e+01,3.430600000000000094e+00,7.431510000000000105e+01,3.678209999999999980e+01,9.486849999999999739e+01,3.989199999999999857e+00,8.596030000000000371e+01  
4.930850000000000222e+01,1.272220000000000084e+01,8.354779999999999518e+01,2.217470000000000141e+01,4.226200000000000045e+01,1.613699999999999912e+00,2.409120000000000061e+01,9.522159999999999513e+01,2.383739999999999881e+01,4.655440000000000111e+01,4.040180000000000149e+01,9.297169999999999845e+01,1.422869999999999990e+01,8.075579999999999359e+01,1.462359999999999971e+01,2.230059999999999931e+01,4.232059999999999889e+01,9.427999999999999714e-01,6.162859999999999872e+01,1.389680000000000071e+01,8.442449999999999477e+01,4.864710000000000178e+01,6.478870000000000573e+01,6.216159999999999997e+01,5.151729999999999876e+01,6.591009999999999991e+01,5.509309999999999974e+01,2.112610000000000099e+01,6.666140000000000043e+01,8.549070000000000391e+01,2.239760000000000062e+01,1.280480000000000018e+01,9.051739999999999498e+01,1.492559999999999931e+01,7.897589999999999577e+01  
5.256759999999999877e+01,7.959869999999999379e+01,9.277169999999999561e+01,3.478750000000000142e+01,7.044679999999999609e+01,6.198449999999999704e+01,5.187899999999999956e+00,5.026939999999999742e+01,5.154569999999999652e+01,4.580060000000000286e+01,7.613790000000000191e+01,2.091000000000000081e-01,1.470379999999999932e+01,6.255299999999999727e+01,3.378569999999999851e+01,4.940129999999999910e+01,1.660000000000000087e-01,6.921199999999999797e+00,2.712869999999999848e+01,2.720639999999999858e+01,1.565760000000000041e+01,8.964560000000000173e+01,6.907380000000000564e+01,2.619960000000000022e+01,5.096889999999999787e+01,3.377920000000000300e+01,3.039239999999999853e+01,8.242820000000000391e+01,9.732229999999999848e+01,3.490630000000000166e+01,3.872379999999999711e+01,2.237190000000000012e+01,6.989919999999999334e+01,4.270600000000000307e+01,5.660170000000000101e+01  
4.316060000000000230e+01,9.654470000000000596e+01,2.126399999999999846e+00,6.497979999999999734e+01,3.485430000000000206e+01,1.080049999999999955e+01,1.625499999999999901e+01,8.395950000000000557e+01,6.869929999999999382e+01,1.747599999999999909e+01,8.641989999999999839e+01,4.055780000000000030e+01,1.255310000000000059e+01,6.250619999999999976e+01,3.958970000000000056e+01,8.072379999999999711e+01,9.054749999999999943e+01,8.458710000000000662e+01,8.973999999999999755e-01,1.230710000000000015e+01,3.731499999999999773e+01,8.855490000000000350e+01,1.686700000000000088e+00,4.727270000000000039e+01,5.314779999999999660e+01,9.456359999999999388e+01,3.959510000000000218e+01,9.894549999999999557e+01,6.446609999999999729e+01,1.198750000000000071e+01,8.001500000000000057e+00,8.605899999999999750e+01,8.438349999999999795e+01,6.564999999999999725e-01,8.557519999999999527e+01  
2.898470000000000013e+01,3.388340000000000174e+01,7.706159999999999854e+01,1.340000000000000080e-01,3.586769999999999925e+01,5.734020000000000294e+01,6.297999999999999687e+01,3.104779999999999873e+01,6.952819999999999823e+01,1.921959999999999980e+01,2.058149999999999835e+01,4.356219999999999715e+01,8.084900000000000375e+01,1.558820000000000050e+01,9.801699999999999591e+01,6.534470000000000312e+01,3.065520000000000067e+01,8.974830000000000041e+01,4.836670000000000158e+01,1.907140000000000057e+01,3.180570000000000164e+01,4.991479999999999961e+01,7.937470000000000425e+01,5.281530000000000058e+01,2.390040000000000120e+01,6.746199999999999974e+00,4.080190000000000339e+01,6.323380000000000223e+01,9.555970000000000653e+01,8.809329999999999927e+01,2.564590000000000103e+01,1.056889999999999930e+01,5.412740000000000151e+01,2.367439999999999856e+01,7.191949999999999932e+01  
9.111000000000000210e-01,7.267199999999999882e+00,9.060070000000000334e+01,9.163899999999999935e+00,2.104530000000000101e+01,9.363410000000000366e+01,7.797029999999999461e+01,6.374909999999999854e+01,4.993149999999999977e+01,8.743949999999999534e+01,7.663400000000000034e+01,8.448359999999999559e+01,2.789659999999999940e+01,5.334609999999999985e+01,7.296399999999999864e+01,3.555199999999999960e+01,1.018309999999999960e+01,8.621590000000000487e+01,2.257809999999999917e+01,1.000629999999999953e+01,3.463909999999999911e+01,8.360550000000000637e+01,7.424460000000000548e+01,7.475610000000000355e+01,7.035400000000000098e+00,7.707779999999999632e+01,4.025589999999999691e+01,7.386820000000000164e+01,2.635810000000000031e+01,2.330989999999999895e+01,7.484210000000000207e+01,8.636870000000000402e+01,2.618570000000000064e+01,5.783290000000000219e+01,4.864929999999999666e+01  
6.915219999999999345e+01,9.429160000000000252e+01,8.263760000000000616e+01,6.665309999999999491e+01,3.681289999999999907e+01,5.787300000000000111e+00,5.604910000000000281e+01,1.728900000000000103e+00,3.580089999999999861e+01,5.898120000000000118e+01,9.097809999999999775e+01,7.798909999999999343e+01,7.169530000000000314e+01,9.083060000000000400e+01,3.450780000000000314e+01,5.907800000000000296e+01,4.783520000000000039e+01,3.066929999999999978e+01,6.086840000000000117e+01,8.848959999999999582e+01,1.974800000000000111e+00,9.872509999999999764e+01,7.949880000000000280e+01,6.754340000000000543e+01,5.666620000000000346e+01,4.840330000000000155e+01,2.639799999999999969e+01,1.388020000000000032e+01,1.751259999999999906e+01,8.600440000000000396e+01,7.327630000000000621e+01,9.875300000000000011e+01,5.506899999999999906e+00,5.105460000000000065e+01,1.638200000000000145e+01  
1.535839999999999961e+01,2.061880000000000024e+01,6.185399999999999920e+01,9.453820000000000334e+01,6.579630000000000223e+01,8.326739999999999498e+01,5.188870000000000005e+01,3.454500000000000171e+01,2.359990000000000165e+01,6.472950000000000159e+01,9.483899999999999864e+01,3.663759999999999906e+01,5.027259999999999707e+01,3.063589999999999947e+01,5.071540000000000248e+01,9.529859999999999332e+01,9.071620000000000061e+01,4.026100000000000279e+01,7.791859999999999786e+01,6.049920000000000186e+01,6.784739999999999327e+01,4.781699999999999839e+00,7.874399999999999622e+00,5.612369999999999948e+01,3.946690000000000254e+01,1.114189999999999969e+01,1.399039999999999928e+01,7.201040000000000418e+01,1.655249999999999844e+01,7.090389999999999304e+01,1.028139999999999965e+01,8.684099999999999397e+01,1.399440000000000062e+01,3.121780000000000044e+01,1.800910000000000011e+01  
3.477100000000000080e+01,3.212019999999999698e+01,7.417480000000000473e+01,4.013280000000000314e+01,7.954000000000000625e+01,9.347410000000000707e+01,1.215019999999999989e+01,3.601189999999999714e+01,2.427799999999999869e+01,2.904159999999999897e+01,6.645340000000000202e+01,8.256910000000000593e+01,7.157880000000000109e+01,5.965090000000000003e+01,8.395820000000000505e+01,7.548239999999999839e+01,2.628719999999999857e+01,4.823310000000000031e+01,5.187469999999999715e+01,3.891479999999999961e+01,6.570560000000000400e+01,1.763329999999999842e+01,3.095230000000000103e+01,2.515490000000000137e+01,1.165709999999999980e+01,1.090400000000000036e+00,7.334390000000000498e+01,3.509329999999999927e+01,4.530409999999999826e+01,5.591100000000000136e+01,2.086749999999999972e+01,7.058669999999999334e+01,3.070220000000000127e+01,1.808539999999999992e+01,2.910800000000000054e+00  
2.073489999999999966e+01,9.622860000000000014e+01,7.675449999999999307e+01,5.361290000000000333e+01,7.533459999999999468e+01,1.006659999999999933e+01,1.763230000000000075e+01,9.375539999999999452e+01,9.231709999999999638e+01,4.020369999999999777e+01,5.375759999999999650e+01,6.071900000000000297e+00,7.590240000000000009e+01,5.852080000000000126e+01,3.713329999999999842e+01,1.244200000000000017e+01,6.634789999999999566e+01,8.738939999999999486e+01,2.786769999999999925e+01,7.781390000000000384e+01,8.564639999999999986e+01,9.651919999999999789e+01,8.422159999999999513e+01,1.161739999999999995e+01,5.779169999999999874e+01,8.878090000000000259e+01,9.383729999999999905e+01,9.873189999999999600e+01,1.313850000000000051e+01,9.271859999999999502e+01,3.021979999999999933e+01,4.311560000000000059e+01,5.670479999999999876e+01,6.599809999999999377e+01,1.877740000000000009e+01  
7.177509999999999479e+01,9.751189999999999714e+01,3.431669999999999732e+01,3.583350000000000080e+01,2.027370000000000161e+01,5.207439999999999714e+01,7.992579999999999529e+01,8.374139999999999873e+01,2.134209999999999852e+01,7.050520000000000209e+01,3.145680000000000121e+01,7.205419999999999447e+01,2.848500000000000032e+00,7.938600000000000101e+00,5.642309999999999803e+01,5.181300000000000239e+00,6.163649999999999807e+01,3.079879999999999995e+01,4.170609999999999928e+01,3.650589999999999691e+01,8.789099999999999469e+00,5.872639999999999816e+01,9.150600000000000733e+00,9.304110000000000014e+01,9.213649999999999807e+01,7.574639999999999418e+01,7.300289999999999679e+01,1.449419999999999931e+01,1.653930000000000078e+01,7.781600000000000072e+00,8.681090000000000373e+01,6.616930000000000689e+01,6.972549999999999670e+01,8.789539999999999509e+01,6.293659999999999854e+01  
9.184850000000000136e+01,3.440160000000000196e+01,8.752760000000000673e+01,5.823709999999999809e+01,2.837740000000000151e+01,5.348559999999999803e+01,5.433429999999999893e+01,2.111000000000000099e-01,9.889029999999999632e+01,5.292119999999999891e+01,5.258760000000000190e+01,8.640749999999999886e+01,8.209120000000000061e+01,3.053669999999999973e+01,1.617940000000000111e+01,3.328300000000000125e+01,1.841090000000000160e+01,7.605830000000000268e+01,9.117159999999999798e+01,9.771699999999999164e+00,1.266230000000000011e+01,9.233299999999999841e+01,2.981439999999999912e+01,2.956530000000000058e+01,5.312660000000000338e+01,7.219010000000000105e+01,3.926630000000000109e+01,6.877840000000000487e+01,2.750039999999999907e+01,2.651289999999999836e+01,8.655599999999999739e+00,8.296580000000000155e+01,6.059440000000000026e+01,5.808149999999999835e+01,9.544729999999999848e+01  
4.835249999999999915e+01,5.327729999999999677e+01,5.246990000000000265e+01,3.770340000000000202e+01,1.417890000000000050e+01,3.434299999999999908e+00,7.928789999999999338e+01,2.535340000000000060e+01,3.221679999999999922e+01,3.700299999999999923e+00,7.576649999999999352e+01,8.418779999999999575e+01,4.326800000000000423e+00,8.356759999999999877e+01,6.924850000000000705e+01,4.456199999999999761e+01,8.689839999999999520e+01,4.734700000000000131e+01,9.431709999999999638e+01,7.609189999999999543e+01,9.847350000000000136e+01,6.405110000000000525e+01,9.497169999999999845e+01,5.596260000000000190e+01,7.031189999999999429e+01,6.250600000000000023e+01,7.981879999999999598e+01,7.778109999999999502e+01,9.466870000000000118e+01,2.335119999999999862e+01,7.072029999999999461e+01,2.996610000000000085e+01,4.227909999999999968e+01,4.027349999999999852e+01,5.304499999999999993e+00  
8.952089999999999748e+01,7.755180000000000007e+01,2.841039999999999921e+01,1.395699999999999941e+00,2.888800000000000168e+01,3.868449999999999989e+01,7.169700000000000273e+01,1.654260000000000019e+01,6.865590000000000259e+01,7.732609999999999673e+01,2.241800000000000015e+00,9.891079999999999472e+01,6.492499999999999716e+01,6.886750000000000682e+01,2.624559999999999960e+01,9.843349999999999511e+01,9.498659999999999570e+01,4.547999999999999821e-01,7.196519999999999584e+01,3.968500000000000139e+00,3.783070000000000022e+01,5.728829999999999956e+01,8.197759999999999536e+01,7.851290000000000191e+01,9.021200000000000330e+01,5.233769999999999811e+01,8.974710000000000321e+01,2.655699999999999950e+00,9.744870000000000232e+01,9.183209999999999695e+01,5.599980000000000047e+01,9.407819999999999538e+01,6.908119999999999550e+01,3.105140000000000100e+01,1.329739999999999966e+01  
5.298279999999999745e+01,2.724350000000000094e+01,7.646169999999999334e+01,7.107940000000000680e+01,2.115919999999999845e+01,5.580279999999999774e+01,6.861419999999999675e+01,1.400530000000000008e+01,9.716509999999999536e+01,7.397010000000000218e+01,1.006240000000000023e+01,1.136900000000000022e+00,3.636400000000000077e+00,3.637250000000000227e+01,2.315520000000000067e+01,3.711560000000000059e+01,5.938170000000000215e+01,7.912999999999999545e+01,7.850990000000000180e+01,6.979349999999999454e+01,5.562910000000000110e+01,1.021659999999999968e+01,8.602830000000000155e+01,1.497080000000000055e+01,8.155729999999999791e+01,1.234040000000000070e+01,2.093929999999999936e+01,5.901749999999999829e+01,9.285030000000000427e+01,5.077980000000000160e+01,5.839500000000000135e+00,3.499049999999999727e+01,1.432089999999999996e+01,1.622560000000000002e+01,9.715999999999999304e+00  
1.271039999999999992e+01,9.712309999999999377e+01,3.326639999999999731e+01,1.614839999999999876e+01,1.329449999999999932e+01,8.113930000000000575e+01,4.659859999999999758e+01,7.208199999999999363e+01,1.554620000000000068e+01,3.516859999999999786e+01,1.153399999999999981e+00,3.320230000000000103e+01,3.565480000000000160e+01,9.840540000000000020e+01,9.796550000000000580e+01,3.275260000000000105e+01,2.585300000000000153e+01,3.589690000000000225e+01,7.643829999999999814e+01,8.110559999999999548e+01,1.123879999999999946e+01,6.206179999999999808e+01,1.958800000000000097e+01,1.596780000000000044e+01,2.846920000000000073e+01,1.430949999999999989e+01,8.991249999999999432e+01,8.927979999999999450e+01,5.309000000000000385e-01,8.146139999999999759e+01,6.257159999999999656e+01,8.110080000000000666e+01,1.680180000000000007e+01,1.193149999999999977e+01,9.455270000000000152e+01  
3.213689999999999714e+01,3.088530000000000086e+01,2.695240000000000080e+01,7.853870000000000573e+01,4.404679999999999751e+01,7.341549999999999443e+01,4.654679999999999751e+01,5.654319999999999879e+01,8.861409999999999343e+01,5.793700000000000294e+00,1.784380000000000166e+01,4.592399999999999949e+01,5.903520000000000323e+01,9.416150000000000375e+01,5.619599999999999795e+01,2.892239999999999966e+01,7.509500000000000064e+00,4.590449999999999875e+01,1.781709999999999994e+01,4.146500000000000341e+01,2.045230000000000103e+01,6.190570000000000306e+01,9.523309999999999320e+01,6.823609999999999332e+01,5.649439999999999884e+01,1.465590000000000082e+01,8.157739999999999725e+01,8.367319999999999425e+01,9.174649999999999750e+01,6.744169999999999732e+01,7.858500000000000263e+00,8.876959999999999695e+01,2.136609999999999943e+01,6.762300000000000466e+01,5.629169999999999874e+01  
5.841649999999999920e+01,6.981119999999999948e+01,2.212440000000000140e+01,8.574330000000000496e+01,6.311840000000000117e+01,4.875260000000000105e+01,5.044039999999999679e+01,1.690370000000000061e+01,4.656689999999999685e+01,3.585410000000000252e+01,8.690160000000000196e+01,1.787049999999999983e+01,4.227080000000000126e+01,2.121460000000000079e+01,3.498380000000000223e+01,8.547709999999999297e+01,2.380110000000000170e+01,3.390090000000000003e+01,4.093739999999999668e+01,3.014499999999999957e+00,2.495029999999999859e+01,7.616620000000000346e+01,5.436390000000000100e+01,2.882110000000000127e+01,6.543019999999999925e+01,6.640749999999999886e+01,2.130310000000000059e+01,8.829349999999999454e+01,4.857899999999999885e+00,4.085040000000000049e+01,6.465059999999999718e+01,8.423980000000000246e+01,7.587479999999999336e+01,2.044389999999999930e+01,5.554800000000000182e+00  
6.450600000000000023e+01,6.066239999999999810e+01,9.354139999999999588e+01,6.080539999999999878e+01,7.789130000000000109e+01,7.985399999999999920e+01,7.049699999999999989e+01,2.800000000000000058e-02,5.107719999999999771e+01,8.068899999999999295e+01,4.008820000000000050e+01,2.398899999999999810e+00,1.890439999999999898e+01,7.239509999999999934e+01,9.605070000000000618e+01,7.252320000000000277e+01,3.683559999999999945e+01,7.310129999999999484e+01,5.474830000000000041e+01,9.623999999999999488e+01,6.531200000000000117e+00,2.592220000000000013e+01,7.900449999999999307e+01,7.151659999999999684e+01,8.043840000000000146e+01,7.664319999999999311e+01,5.656139999999999901e+01,4.336310000000000286e+01,7.229019999999999868e+01,3.333259999999999934e+01,8.188920000000000243e+01,2.133700000000000152e+00,8.256999999999999318e+01,2.351170000000000115e+01,8.028200000000000003e+00  
7.519970000000000709e+01,2.327039999999999864e+01,1.090380000000000038e+01,5.507650000000000290e+01,3.229240000000000066e+01,3.215610000000000213e+01,4.435309999999999775e+01,7.885729999999999507e+01,4.720790000000000219e+01,1.588870000000000005e+01,8.234139999999999304e+01,8.442260000000000275e+01,8.554590000000000316e+01,5.041960000000000264e+01,9.584899999999999309e+00,4.000099999999999767e+01,2.296519999999999939e+01,5.088949999999999818e+01,1.963660000000000139e+01,8.746040000000000703e+01,9.178959999999999297e+01,1.759769999999999968e+01,4.701129999999999853e+01,9.341240000000000521e+01,7.771760000000000446e+01,4.997999999999999687e+01,7.701460000000000150e+01,8.793569999999999709e+01,4.240180000000000149e+01,8.974689999999999657e+01,7.356719999999999970e+01,1.189559999999999995e+01,6.860680000000000689e+01,3.515699999999999825e+00,8.779559999999999320e+01  
1.550309999999999988e+01,4.090800000000000125e+01,8.454200000000000159e+01,6.831740000000000634e+01,2.522230000000000061e+01,1.905999999999999917e+00,7.159900000000000375e+00,3.855129999999999768e+01,2.335060000000000002e+01,1.473610000000000042e+01,3.014450000000000074e+01,2.692950000000000088e+01,3.360629999999999740e+01,2.709969999999999857e+01,3.149799999999999933e+00,6.588769999999999527e+01,9.265919999999999845e+01,7.208839999999999293e+01,6.700700000000000500e+01,2.560310000000000130e+01,8.044440000000000168e+01,4.912899999999999601e+00,2.485199999999999854e+00,3.032049999999999912e+01,1.786169999999999902e+01,4.361659999999999826e+01,5.835240000000000293e+01,4.642299999999999649e+00,1.266600000000000037e+01,5.627320000000000277e+01,3.952649999999999864e+01,7.792100000000000648e+01,5.231170000000000186e+01,8.413500000000000512e+01,6.239229999999999876e+01  
7.924330000000000496e+01,4.325619999999999976e+01,1.698920000000000030e+01,4.633520000000000039e+01,5.253810000000000002e+01,7.787470000000000425e+01,9.701919999999999789e+01,3.330989999999999895e+01,5.188049999999999784e+01,4.834089999999999776e+01,6.798430000000000462e+01,1.417340000000000089e+01,7.562539999999999907e+01,7.252979999999999450e+01,4.426380000000000337e+01,5.129509999999999792e+01,9.304479999999999507e+01,1.615220000000000056e+01,6.597719999999999629e+01,9.584180000000000632e+01,6.796349999999999625e+01,4.157930000000000348e+01,6.417799999999999727e+01,6.874469999999999459e+01,9.176829999999999643e+01,8.943099999999999739e+01,6.079200000000000159e+00,9.803730000000000189e+01,2.052469999999999928e+01,3.385300000000000153e+01,1.943969999999999843e+01,8.242700000000000671e+01,4.401559999999999917e+01,1.807949999999999946e+01,9.522429999999999950e+01  
8.520669999999999789e+01,8.170310000000000628e+01,9.762250000000000227e+01,2.640970000000000084e+01,8.666620000000000346e+01,1.205829999999999913e+01,9.713349999999999795e+01,3.417719999999999914e+01,2.128910000000000124e+01,6.044850000000000279e+01,6.728180000000000405e+01,6.658490000000000464e+01,3.833099999999999952e+00,6.224119999999999919e+01,6.516049999999999898e+01,9.360490000000000066e+01,8.813030000000000541e+01,4.616649999999999920e+01,1.944810000000000016e+01,3.775780000000000314e+01,4.878840000000000288e+01,9.031180000000000518e+01,1.141399999999999970e+01,3.955700000000000216e+00,8.892400000000000659e+01,7.552800000000000402e+00,2.135000000000000142e+01,3.311650000000000205e+01,8.842570000000000618e+01,5.755850000000000222e+01,3.655699999999999950e+00,3.213049999999999784e+01,8.395019999999999527e+01,4.153900000000000148e+01,6.618240000000000123e+01  
8.947369999999999379e+01,2.045250000000000057e+01,9.720900000000000318e+00,4.796090000000000231e+01,9.754000000000000625e+01,6.331020000000000181e+01,7.845780000000000598e+01,3.995519999999999783e+01,8.729680000000000462e+01,1.647129999999999939e+01,5.993229999999999791e+01,4.572099999999999831e+00,5.582450000000000045e+01,9.786589999999999634e+01,2.633230000000000004e+01,4.488790000000000191e+01,5.490500000000000114e+01,2.473179999999999978e+01,7.361169999999999902e+01,7.154739999999999611e+01,8.854430000000000689e+01,5.818390000000000128e+01,6.476970000000000027e+01,4.775560000000000116e+01,2.534609999999999985e+01,7.549379999999999313e+01,2.472660000000000124e+01,5.062570000000000192e+01,4.699399999999999800e+00,9.783570000000000277e+01,8.406340000000000146e+01,8.771850000000000591e+01,3.792289999999999850e+01,6.570650000000000546e+01,1.675189999999999912e+01  
9.119599999999999795e+01,1.665510000000000090e+01,2.396989999999999910e+01,4.384909999999999997e+01,6.564329999999999643e+01,5.689889999999999759e+01,9.037130000000000507e+01,2.128859999999999886e+01,3.106240000000000023e+01,1.403229999999999933e+01,1.893120000000000047e+01,6.077279999999999660e+01,3.418919999999999959e+01,3.994980000000000331e+01,9.018670000000000186e+01,3.597099999999999653e+01,9.561209999999999809e+01,5.066819999999999879e+01,4.226160000000000139e+01,2.520169999999999888e+01,1.873590000000000089e+01,1.621849999999999881e+01,8.319429999999999836e+01,7.188600000000000101e+00,3.020870000000000033e+01,9.357659999999999911e+01,4.555100000000000193e+01,1.869599999999999929e+00,5.897140000000000271e+01,7.299800000000000466e+01,3.393789999999999907e+01,7.280889999999999418e+01,5.599179999999999779e+01,8.120430000000000348e+01,2.418110000000000070e+01  
3.172490000000000165e+01,6.263000000000000256e+01,1.736220000000000141e+01,7.712630000000000052e+01,1.828109999999999857e+01,6.287330000000000041e+01,8.788530000000000086e+01,5.521509999999999962e+01,7.792480000000000473e+01,7.378220000000000312e+01,3.327320000000000277e+01,2.143919999999999959e+01,3.566539999999999822e+01,1.493560000000000088e+01,7.848839999999999861e+01,3.022739999999999938e+01,6.328490000000000038e+01,8.510819999999999652e+01,5.102279999999999660e+01,8.538320000000000221e+01,4.433239999999999981e+01,1.918750000000000000e+01,9.492090000000000316e+01,8.777630000000000621e+01,3.969069999999999965e+01,4.245170000000000243e+01,7.738230000000000075e+01,1.730610000000000070e+01,7.428530000000000655e+01,1.596999999999999975e+00,1.039750000000000085e+01,5.345040000000000191e+01,1.627319999999999922e+01,1.081859999999999999e+01,1.088170000000000037e+01  
8.501309999999999434e+01,6.210370000000000346e+01,5.860210000000000008e+01,6.874389999999999645e+01,6.109949999999999903e+01,7.291599999999999682e+01,6.918729999999999336e+01,4.399700000000000166e+00,1.773740000000000094e+01,4.286780000000000257e+01,5.700229999999999819e+01,8.790399999999999636e+01,5.109080000000000155e+01,8.821799999999999642e+00,5.572699999999999676e+01,5.348850000000000193e+01,7.994979999999999620e+01,4.299199999999999910e+00,2.570949999999999847e+01,6.150339999999999918e+01,1.906929999999999836e+01,3.138990000000000080e+01,8.681969999999999743e+01,5.317450000000000188e+01,5.786400000000000432e+00,7.722679999999999723e+01,7.321980000000000643e+01,6.167110000000000269e+01,9.536459999999999582e+01,4.304400000000000226e+00,7.622660000000000480e+01,1.246899999999999897e+00,8.393000000000000682e+00,7.751869999999999550e+01,1.273060000000000080e+01  
6.770539999999999736e+01,7.787220000000000653e+01,3.910079999999999956e+01,8.488030000000000541e+01,1.855480000000000018e+01,5.444019999999999726e+01,1.863350000000000151e+01,3.076739999999999853e+01,9.546300000000000452e+00,8.218919999999999959e+01,1.089499999999999913e+00,2.842180000000000106e+01,2.484329999999999927e+01,2.861510000000000176e+01,4.959499999999999886e+01,2.412859999999999872e+01,7.563779999999999859e+01,3.754890000000000327e+01,2.443999999999999950e+00,8.938530000000000086e+01,6.722029999999999461e+01,7.473600000000000421e+01,9.458220000000000027e+01,5.135999999999999455e-01,1.752260000000000062e+01,3.699800000000000200e+00,8.316540000000000532e+01,1.938520000000000110e+01,8.657859999999999445e+01,1.774620000000000175e+01,5.429350000000000165e+01,4.831530000000000058e+01,2.769510000000000005e+01,8.850929999999999609e+01,7.859300000000000175e+00  
8.305670000000000641e+01,5.585609999999999786e+01,8.658599999999999852e+01,5.532039999999999935e+01,6.675320000000000675e+01,8.385500000000000398e+00,6.318500000000000227e+00,5.748930000000000007e+01,6.334870000000000090e+01,7.407500000000000284e+01,5.718419999999999703e+01,2.196549999999999869e+01,2.923349999999999937e+01,5.134340000000000259e+01,2.531090000000000018e+01,5.715600000000000236e+00,4.716219999999999857e+01,5.511599999999999966e+01,3.163240000000000052e+01,2.047879999999999967e+01,3.003910000000000124e+01,9.700279999999999347e+01,6.154399999999999693e+01,4.952289999999999992e+01,6.202759999999999962e+01,9.049819999999999709e+01,9.240850000000000364e+01,9.209159999999999968e+01,3.283809999999999718e+01,8.543930000000000291e+01,2.850860000000000127e+01,6.136930000000000263e+01,9.705440000000000111e+01,3.158380000000000010e+01,1.450779999999999959e+01  
2.008439999999999870e+01,8.931589999999999918e+01,4.080980000000000274e+01,5.141270000000000095e+01,1.832700000000000173e+01,3.814609999999999701e+01,9.697589999999999577e+01,7.286839999999999407e+01,3.448940000000000339e+01,3.918900000000000006e+01,6.655949999999999989e+01,4.434510000000000218e+01,7.638179999999999836e+01,8.195040000000000191e+01,8.547960000000000491e+01,7.224110000000000298e+01,3.208809999999999718e+01,7.130620000000000402e+01,6.734310000000000684e+01,2.026249999999999929e+01,3.201019999999999754e+01,1.446979999999999933e+01,5.391669999999999874e+01,8.892489999999999384e+01,7.232299999999999329e+01,5.435199999999999676e+01,5.798600000000000421e+00,1.975949999999999918e+01,6.595520000000000493e+01,2.416399999999999881e+00,8.082540000000000191e+01,6.468089999999999407e+01,1.379720000000000013e+01,6.610920000000000130e+01,3.148039999999999949e+01  
5.527799999999999869e+01,5.555429999999999779e+01,2.584759999999999991e+01,7.130300000000000082e+00,5.736140000000000327e+01,7.312449999999999761e+01,5.802909999999999968e+01,4.346549999999999869e+01,7.637030000000000030e+01,9.051489999999999725e+01,2.846799999999999997e+01,1.507179999999999964e+01,3.606629999999999825e+01,5.003260000000000218e+01,2.222550000000000026e+01,5.979999999999999899e-02,7.653140000000000498e+01,1.581329999999999991e+01,2.724330000000000140e+01,4.482690000000000197e+01,8.702190000000000225e+01,2.915469999999999828e+01,3.306309999999999860e+01,3.474969999999999715e+01,8.981029999999999802e+01,9.134109999999999729e+01,7.086419999999999675e+01,5.492159999999999798e+01,8.497799999999999443e+01,6.601300000000000168e+00,9.686560000000000059e+01,9.730389999999999873e+01,9.151970000000000027e+01,7.234820000000000562e+01,5.694039999999999679e+01  
2.102599999999999802e+00,1.155499999999999972e+01,8.021299999999999386e+01,9.174209999999999354e+01,5.001599999999999824e+00,5.470450000000000301e+01,4.228000000000000091e-01,2.828399999999999892e+01,5.102519999999999811e+01,6.748099999999999454e+01,9.306599999999999540e+00,4.516919999999999646e+01,2.501539999999999964e+01,5.982070000000000221e+01,3.039430000000000121e+01,8.658889999999999532e+01,3.438629999999999853e+01,7.422530000000000427e+01,1.693900000000000006e+01,3.990200000000000102e+01,9.597839999999999350e+01,7.688160000000000593e+01,5.874629999999999797e+01,7.663670000000000471e+01,2.929289999999999949e+01,5.515449999999999875e+01,5.577709999999999724e+01,2.320730000000000004e+01,9.790340000000000487e+01,9.729089999999999350e+01,3.857410000000000139e+01,7.684359999999999502e+01,5.944000000000000394e-01,3.946000000000000174e+00,8.239900000000000091e+01  
5.540899999999999714e+00,8.390890000000000271e+01,1.889389999999999858e+01,6.340720000000000312e+01,2.451279999999999859e+01,5.215149999999999864e+01,5.744050000000000011e+01,3.966149999999999665e+01,8.764400000000000190e+00,4.848900000000000432e+00,6.317000000000000171e+01,2.271000000000000085e+01,9.661270000000000380e+01,8.013460000000000605e+01,7.949649999999999750e+01,3.108739999999999881e+01,6.880880000000000507e+01,4.295620000000000260e+01,4.695080000000000098e+01,7.841280000000000427e+01,8.773760000000000048e+01,8.941880000000000450e+01,9.172090000000000032e+01,9.063330000000000553e+01,4.917929999999999779e+01,9.556669999999999732e+01,3.145400000000000063e+01,4.246100000000000207e+00,7.359199999999999875e+01,7.864610000000000412e+01,5.628240000000000265e+01,4.589860000000000184e+01,3.582739999999999725e+01,7.815349999999999397e+01,3.634199999999999875e+00  
2.434299999999999997e+01,1.622429999999999950e+01,2.031599999999999895e+01,3.896509999999999962e+01,8.755360000000000298e+01,2.054019999999999868e+01,3.841129999999999711e+01,1.632290000000000063e+01,9.543250000000000455e+01,3.092650000000000077e+01,4.679529999999999745e+01,9.876909999999999457e+01,7.272190000000000509e+01,1.631220000000000070e+01,7.078360000000000696e+01,2.160679999999999978e+01,9.771840000000000259e+01,4.506770000000000209e+01,4.548199999999999577e+00,6.635680000000000689e+01,8.244639999999999702e+01,2.157570000000000121e+01,1.303149999999999942e+01,1.799739999999999895e+01,5.040279999999999916e+01,4.361489999999999867e+01,7.144140000000000157e+01,8.018880000000000052e+01,6.592570000000000618e+01,1.535389999999999944e+01,6.885099999999999909e+01,1.789649999999999963e+01,7.478430000000000177e+01,8.189000000000000057e+01,2.410290000000000177e+01  
9.273550000000000182e+01,3.793149999999999977e+01,2.636730000000000018e+01,5.474599999999999689e+00,5.202499999999999680e+00,4.790570000000000306e+01,8.283010000000000161e+01,8.827110000000000412e+01,8.697280000000000655e+01,5.193610000000000326e+01,6.077300000000000146e+00,5.609459999999999980e+01,7.942999999999999616e+00,6.127100000000000080e+01,2.995309999999999917e+01,7.345699999999999363e+01,2.533279999999999887e+01,7.087080000000000268e+01,6.820369999999999777e+01,2.618840000000000146e+01,9.267629999999999768e+01,5.065540000000000020e+01,1.246039999999999992e+01,3.428960000000000008e+01,2.124589999999999890e+01,9.267419999999999902e+01,8.854900000000000659e+00,9.731109999999999616e+01,3.300499999999999989e+00,3.266349999999999909e+01,5.613100000000000200e+00,5.805310000000000059e+01,9.057890000000000441e+01,6.584999999999999742e-01,1.425530000000000008e+01  
9.083410000000000650e+01,1.384709999999999930e+01,9.414239999999999498e+01,8.130110000000000525e+01,3.182760000000000034e+01,4.314309999999999690e+01,4.061950000000000216e+01,8.445889999999999986e+01,9.699970000000000425e+01,7.123860000000000525e+01,1.831970000000000098e+01,5.846209999999999951e+01,2.747419999999999973e+01,1.730389999999999873e+01,4.546170000000000044e+01,6.625099999999999767e+00,4.712060000000000315e+01,1.132249999999999979e+01,4.150090000000000146e+01,4.876709999999999923e+01,6.913089999999999691e+01,8.422929999999999495e+01,3.581300000000000150e+00,9.637130000000000507e+01,8.216300000000000381e+00,8.792090000000000316e+01,2.002799999999999869e+01,1.519410000000000061e+01,7.813360000000000127e+01,1.066619999999999990e+01,7.150929999999999609e+01,6.436620000000000630e+01,4.651319999999999766e+01,7.911500000000000199e+00,5.768580000000000041e+01  
2.239379999999999882e+01,2.223420000000000130e+01,2.995810000000000173e+01,7.977679999999999438e+01,9.664759999999999707e+01,7.074290000000000589e+01,5.696260000000000190e+01,3.011029999999999873e+01,8.104460000000000264e+01,9.286020000000000607e+01,5.019659999999999656e+01,4.935900000000000176e+00,3.170990000000000109e+01,9.612690000000000623e+01,9.005670000000000641e+01,1.538579999999999970e+01,4.816810000000000258e+01,8.775579999999999359e+01,2.790210000000000079e+01,6.311110000000000042e+01,3.687019999999999698e+01,7.567260000000000275e+01,8.103759999999999764e+01,6.023699999999999832e+00,2.913550000000000040e+01,6.072050000000000125e+01,9.552219999999999800e+01,8.366190000000000282e+01,1.522070000000000078e+01,4.256700000000000017e+01,5.067649999999999721e+01,7.553399999999999892e+00,8.147650000000000148e+01,8.645709999999999695e+01,5.793800000000000061e+00  
2.633510000000000062e+01,2.491999999999999993e+00,6.451460000000000150e+01,6.498080000000000211e+01,5.626570000000000249e+01,8.098329999999999984e+01,2.170120000000000005e+01,1.648079999999999856e+01,3.888750000000000284e+01,6.172639999999999816e+01,9.203419999999999845e+01,4.644700000000000273e+01,5.386610000000000298e+01,6.547110000000000696e+01,7.782479999999999620e+01,6.808880000000000621e+01,5.537769999999999726e+01,9.105570000000000164e+01,4.186280000000000001e+01,9.361079999999999757e+01,3.963100000000000023e+01,4.443110000000000070e+01,4.800869999999999749e+01,5.462199999999999989e+01,2.181950000000000145e+01,3.868560000000000088e+01,5.294299999999999784e+00,4.703540000000000276e+01,7.944100000000000250e+01,3.679789999999999850e+01,7.420090000000000430e+01,5.694210000000000349e+01,4.392810000000000059e+01,8.654619999999999891e+01,8.464730000000000132e+01