Judging Details

Judge System

Your programs will be run inside a *sandboxed environment*, i.e. with protections to prevent the system from being damaged. Specifically:

- Memory usage is limited to 2 GB in the environment. Note it is the total amount, not the amount you can use exclusively in your programs.

- The stack size is set unlimited (in C/C++), only capped by the total memory limit.

- Multi-processing or multi-threading is discouraged and unlikely beneficial, though not prohibited. Remember your programs will run on a single core of processor. The total number of processes is limited to 15, including ones the system may create outside your programs.

- It is *never* recommended to run external commands. It is technically possible but probably does not work as you expect.

If you have no idea about what these mean — no worries. Just remember your programs should use the standard input and output, not files. Everything else should be unrelated to you.

There are a couple more restrictions that apply:

- The total amount of source code must not exceed 256 KB in each submission.

- Your program must compile within 30 seconds.

See the DOMjudge team manual for more details about these restrictions.

Note about Platform

The judge system is running on Google Compute Engine, C2 machine type (`c2-standard-4`). For more information about Google Compute Engine, please visit

> https://cloud.google.com/compute/docs/cpu-platforms

Compilers & Options

The judge system uses the following compilers and options to compile and run your programs.

"$@"** is substituted with your source file(s); **"$DEST" is the name of the binary (which is "`./a.out`" by default) and is chosen arbitrarily by the system.

C	
Version	`gcc (Debian 8.3.0-6) 8.3.0`
Compile	`gcc -g -O2 -std=gnu11 -static -o "$DEST" "$@" -lm`
Run	`"$DEST" < `*`infile`*` > `*`outfile`*
C++	
Version	`g++ (Debian 8.3.0-6) 8.3.0`
Compile	`g++ -g -O2 -std=gnu++17 -static -o "$DEST" "$@"`
Run	`"$DEST" < `*`infile`*` > `*`outfile`*
Java	
Version	`OpenJDK: "11.0.9+11-post-Debian-1deb10u1"`
Compile	`javac -encoding UTF-8 -sourcepath . -d . "$@"`
Run[1]	`java -Dfile.encoding=UTF-8 -XX:+UseSerialGC -Xss64m -Xms1920m -Xmx1920m `*`MainClass`*` < `*`infile`*` > `*`outfile`*
Python 3 (PyPy)	
Version	`Python 3.5.3 (7.0.0+dfsg-3, Feb 21 2019, 03:51:22)` `[PyPy 7.0.0 with GCC 8.2.0] on linux`
Compile[2]	`pypy3 -m py_compile "$@"`
Run	`pypy3 "$@" < `*`infile`*` > `*`outfile`*
Kotlin	
Version	`kotlinc-jvm 1.3.50`
Compile	`kotlinc -d . "$@"`
Run[1]	`kotlin -Dfile.encoding=UTF-8 -J-XX:+UseSerialGC -J-Xss64m -J-Xms1920m -J-Xmx1920m `*`MainClass`*` < `*`infile`*` > `*`outfile`*

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[1] DOMjudge will detect the main class automatically; you do not have to name it `Main`. See the DOMjudge team manual for details.

[2] Python's "Compile" commands only verify the syntax. `*.pyc` files will *not* be used in the real run.

Submission Results

Your submissions will eventually be responded with one of the following results:

Accepted

- **CORRECT** — Your program ran successfully and passed all test cases.

Rejected with 20-minute penalty

- **WRONG-ANSWER** — Your program neither crashed nor exceeded the time limit, but produced incorrect output for some test case(s).

- **NO-OUTPUT** — Your program did not produce any output for some test case(s).

- **TIMELIMIT** — Your program did not finish within the time limit for some test case.

- **RUN-ERROR** — Your program crashed with some test case or otherwise exited with a non-zero exit status (e.g. because of missing "`return 0;`" in C/C++).

- **OUTPUT-LIMIT** — Your program produced excessive output (> 4 MB) for some test case.

Rejected with no penalty

- **COMPILE-ERROR** — Your program did not compile on the judging environment. You can consult error message(s) on the submission details page.

- **TOO-LATE** — Your program was submitted after the contest was over.[3]

Note to Python Users

The judges have solved all problems in C++ and Java, but not necessarily in Python. They do not guarantee that all problems can be solved in Python.

Only syntax errors will be reported as **COMPILE-ERROR**. Other types of errors, such as `NameError` or `ModuleNotFoundError`, will result in **RUN-ERROR** and incur a 20-minute penalty.

It is fine, though not needed, to start your scripts with an interpreter directive (line starting with "`#!`", also known as *shebang*).[4]

The full list of modules available in the judge system can be found in the following pages.

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[3] Note it does not mean your programs need to be *judged* before the end of the contest. Your programs will be judged as long as submitted ("*queued*") within the contest time.

[4] Some past versions of DOMjudge refused scripts that contain a shebang.

Available Python Modules

__future__	aifc	hmac	sched
_ast	antigravity	html	secrets
_asyncio	appdirs	html5lib	select
_bisect	argparse	http	selectors
_blake2	array	idna	setuptools
_bootlocale	ast	imaplib	shelve
_bz2	asynchat	imghdr	shlex
_codecs	asyncio	imp	shutil
_codecs_cn	asyncore	importlib	signal
_codecs_hk	atexit	inspect	site
_codecs_iso2022	audioop	io	sitecustomize
_codecs_jp	base64	ipaddress	six
_codecs_kr	bdb	itertools	smtpd
_codecs_tw	binascii	json	smtplib
_collections	binhex	keyword	sndhdr
_collections_abc	bisect	lib2to3	socket
_compat_pickle	builtins	linecache	socketserver
_compression	bz2	locale	spwd
_crypt	cProfile	lockfile	sqlite3
_csv	cachecontrol	logging	sre_compile
_ctypes	calendar	lzma	sre_constants
_ctypes_test	cgi	macpath	sre_parse
_curses	cgitb	macurl2path	ssl
_curses_panel	chardet	mailbox	stat
_datetime	chunk	mailcap	statistics
_dbm	cmath	marshal	string
_decimal	cmd	math	stringprep
_dummy_thread	code	mimetypes	struct
_elementtree	codecs	mmap	subprocess
_functools	codeop	modulefinder	sunau
_gdbm	collections	multiprocessing	symbol
_hashlib	colorama	netrc	symtable
_heapq	colorsys	nis	sys
_imp	compileall	nntplib	sysconfig
_io	concurrent	ntpath	syslog
_json	configparser	nturl2path	tabnanny
_locale	contextlib	numbers	tarfile
_lsprof	copy	opcode	telnetlib
_lzma	copyreg	operator	tempfile
_markupbase	crypt	optparse	termios
_md5	csv	os	test
_multibytecodec	ctypes	ossaudiodev	textwrap
_multiprocessing	curses	packaging	this
_opcode	datetime	parser	threading
_operator	dbm	pathlib	time
_osx_support	decimal	pdb	timeit
_pickle	difflib	pickle	token
_posixsubprocess	dis	pickletools	tokenize

_pydecimal	distlib	pip	trace
_pyio	distro	pipes	traceback
_random	distutils	pkg_resources	tracemalloc
_sha1	doctest	pkgutil	tty
_sha256	dummy_threading	platform	turtle
_sha3	easy_install	plistlib	types
_sha512	email	poplib	typing
_signal	encodings	posix	unicodedata
_sitebuiltins	ensurepip	posixpath	unittest
_socket	enum	pprint	urllib
_sqlite3	errno	profile	urllib3
_sre	faulthandler	pstats	uu
_ssl	fcntl	pty	uuid
_stat	filecmp	pwd	venv
_string	fileinput	py_compile	warnings
_strptime	fnmatch	pyclbr	wave
_struct	formatter	pydoc	weakref
_symtable	fractions	pydoc_data	webbrowser
_sysconfigdata_m_li	ftplib	pyexpat	webencodings
_testbuffer	functools	pyparsing	wsgiref
_testcapi	gc	queue	xdrlib
_testimportmultiple	genericpath	quopri	xml
_testmultiphase	getopt	random	xmlrpc
_thread	getpass	re	xxlimited
_threading_local	gettext	readline	xxsubtype
_tracemalloc	glob	reprlib	zipapp
_warnings	grp	resource	zipfile
_weakref	gzip	retrying	zipimport
_weakrefset	hashlib	rlcompleter	zlib
abc	heapq	runpy	