

# The ICPC Balloon Utility



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An ICPC Tool

## Introduction

The ICPC Balloon Utility (BU) is a tool for keeping track of balloons earned by contest teams for successful run submissions. It receives submission information from one of several input sources, displays information about each submission (such as the problem, team, run ID, school, submission time, etc.) and optionally automatically prints "balloon notification" messages to assist runners in delivering balloons. It also provides runners with an interactive mechanism for tracking delivered balloons, and is even capable of printing maps showing runners where to go find the appropriate balloon and where on the contest floor the receiving team is located (although instructions for configuring it to do that are beyond the scope of this introductory guide).

The following shows a screen shot of the Balloon Utility main screen, after it has been loaded with run submission information from a Contest Control System:



## Using the Balloon Utility

### Installation

To install the Balloon Utility, download its distribution package from the [ICPCTools website](#) and unzip it to any convenient location. The BU is a Java program. The distribution is a self-contained package which contains all the Java libraries and other components necessary to run the Balloon Utility. (Note that Java, Version 1.8 or higher, must also be installed on the machine.)

### Execution

The Balloon Utility distribution includes a set of scripts which can be used to launch the program, `balloon.bat` for Windows platforms and `balloon.sh` for macOS and Linux. To start the BU, open a terminal window (command shell), change to the folder where you unzipped the distribution, and type the name of the appropriate script. The scripts do not require any parameters, although adding `--help` will generate a mildly-useful message, and `--clean` will remove any saved balloon data. For more advanced use, you can enter a Contest API URL, user, and password to connect directly to a Contest API server upon startup.

### Input Data Sources

When the BU starts it displays a screen similar to the following:

The screenshot shows the 'Print' dialog of the 'ICPC Balloon Utility'. It contains sections for 'Contest Information' (Name, Length, Start time, Contest time) and 'Balloons'. The 'Balloons' section has a table with columns: #, Run, Problem, Team, University, Time, Firsts, Printed, and Delivered. The table is currently empty. To the right of the table are buttons for 'Print Preview...', 'Print', and 'Toggle Delivery'. At the bottom, there is a checkbox for 'Automatically print new balloons', a status indicator '0 of 0 balloons', and buttons for 'Print Selected Summary' and 'Print Full Summary'.

(If existing data was loaded it will be displayed in the screen; otherwise the screen will be unpopulated as shown above.)

In order to use the BU once it is started, it must be connected to the output of a *Contest Control System* (CCS). The Balloon Utility will work with any CCS or the CDS which is compliant with the [Contest API Specification](#). Tools known to produce compliant event feeds include [Contest Data Server](#), [DOMjudge](#), [PC-Squared](#), and [Kattis](#); other Contest Control Systems may also produce compatible event feeds and hence work with the Balloon Utility.

The BU is capable of operating with contest data obtained from one of two different sources: a Contest API source (e.g. CCS or CDS) or a local contest path. If you don't specify a source on the command line you will be prompted on startup.

The screenshot shows the 'ICPC Tools Balloon Utility Connection' dialog. It asks 'How do you want to connect to a contest?' and provides three options:
 

- Connect to CDS over HTTPS** (selected): Includes fields for URL (https://localhost:443), User (balloon), and Password (masked with dots).
- Connect to CCS via socket**: Includes fields for Host (10.1.1.20) and Port (4713).
- Read local event feed**: Includes a file path (C:\Contest\events.xml) and a 'Browse...' button.

 At the bottom right are 'Connect' and 'Cancel' buttons.

Connecting the BU directly to a running (compatible) CCS or CDS is done using the REST selection in the dialog and entering a valid Contest API URL, user, and password. The BU can be connected to a folder or event feed file using the Disk selection.

## Operating the Balloon Utility

Each time a successful-run notification arrives in the event feed the BU will display the run information in its grid. If the run represents special conditions, such as being the first solution for a Team (T), Problem (P), Region or Group (R), or in the entire Contest (C), corresponding flags are displayed in the "Firsts" column. The display grid can be sorted on any column by clicking in the corresponding column header.

One of the most common uses of the BU is for printing "Balloon Notification" messages for runners delivering balloons to teams. Balloon Notification printouts contain information identifying the team (by name and number), problem (by letter), the run submission that earned the balloon (by run ID and submission time) and the color of the balloon which should be delivered.

Balloon Notifications may also contain additional information such as how many other balloons the team has and any special award categories associated with the new balloon (such as an indication that it is the team's *first* balloon or that the balloon represents the first solution (by any team) of the specified problem. Balloon Notifications can also be configured to print a map showing where the team is located on the contest floor, although the mechanism for configuring this map is not documented at this time.

A sample Balloon Notification is shown below:

**Balloon Print Preview**

Team: **Peking University**

**62**  
A - Burgundy  
Run 20  
Time 5  
Balloon 1

Team has no existing balloons

**Firsts:**

- First balloon in contest!**  
Deliver additional gold foil balloon with dignitaries
- First solution to problem A!**  
Deliver burgundy foil balloon
- First balloon for this team**  
Escort photographers to team

**Balloon Colors:**

A	B	C	D	E	F	G	H
Burgundy	Pink	Light green	Black	Purple	White	Red	Yellow
I	J	K	L	M			
Blue	Silver	Orange	Green	Gold			

**Run Data Grid:**

Problem	Run ID	Time	Score	Firsts
A	128	01	100	
B	127	04	100	
C	126	04	100	
D	125	10	100	
E	124	10	100	
F	123	10	100	
G	122	10	100	
H	121	10	100	
I	120	10	100	
J	119	10	100	
K	118	10	100	
L	117	10	100	
M	116	10	100	
N	115	10	100	
O	114	10	100	
P	113	10	100	
Q	112	10	100	
R	111	10	100	
S	110	10	100	
T	109	10	100	
U	108	10	100	
V	107	10	100	
W	106	10	100	
X	105	10	100	
Y	104	10	100	
Z	103	10	100	
AA	102	10	100	
AB	101	10	100	
AC	100	10	100	
AD	99	10	100	
AE	98	10	100	
AF	97	10	100	
AG	96	10	100	
AH	95	10	100	
AI	94	10	100	
AJ	93	10	100	
AK	92	10	100	
AL	91	10	100	
AM	90	10	100	
AN	89	10	100	
AO	88	10	100	
AP	87	10	100	
AQ	86	10	100	
AR	85	10	100	
AS	84	10	100	
AT	83	10	100	
AU	82	10	100	
AV	81	10	100	
AW	80	10	100	
AX	79	10	100	
AY	78	10	100	
AZ	77	10	100	
BA	76	10	100	
BB	75	10	100	
BC	74	10	100	
BD	73	10	100	
BE	72	10	100	
BF	71	10	100	
BG	70	10	100	
BH	69	10	100	
BI	68	10	100	
BJ	67	10	100	
БК	66	10	100	
BL	65	10	100	
BM	64	10	100	
BN	63	10	100	
BO	62	10	100	
BP	61	10	100	
BQ	60	10	100	
BR	59	10	100	
BS	58	10	100	
BT	57	10	100	
BU	56	10	100	
BV	55	10	100	
BW	54	10	100	
BX	53	10	100	
BY	52	10	100	
BZ	51	10	100	
CA	50	10	100	
CB	49	10	100	
CC	48	10	100	
CD	47	10	100	
CE	46	10	100	
CF	45	10	100	
CG	44	10	100	
CH	43	10	100	
CI	42	10	100	
CJ	41	10	100	
CK	40	10	100	
CL	39	10	100	
CM	38	10	100	
CN	37	10	100	
CO	36	10	100	
CP	35	10	100	
CQ	34	10	100	
CR	33	10	100	
CS	32	10	100	
CT	31	10	100	
CU	30	10	100	
CV	29	10	100	
CU	28	10	100	
CF	27	10	100	
CG	26	10	100	
CH	25	10	100	
CI	24	10	100	
CJ	23	10	100	
CK	22	10	100	
CL	21	10	100	
CM	20	10	100	
CN	19	10	100	
CO	18	10	100	
CP	17	10	100	
CQ	16	10	100	
CR	15	10	100	
CS	14	10	100	
CT	13	10	100	
CU	12	10	100	
CV	11	10	100	
CU	10	10	100	
CV	9	10	100	
CU	8	10	100	
CV	7	10	100	
CU	6	10	100	
CV	5	10	100	
CU	4	10	100	
CV	3	10	100	
CU	2	10	100	
CV	1	10	100	

Barcode: 0 0 0 0 0 1 0 0 0 2 0 7

ICPC World Finals 2015

2015 World Finals Morocco  
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To select the printer to be used for printing Balloon Notifications, pull down the "Print" menu in the upper left corner of the main screen and select "Configure Printer"; this will display a list of all printers known to

the underlying system and any of these can be selected for use by the BU.

The selected printer can be changed at any time (again, using the Print menu), and the same menu also allows for sending a "Test Message" to the printer to be sure it is working.

The *Automatically print new balloons* checkbox at the bottom of the main screen can be used to enable or disable automatic printing; if enabled, then whenever a new successful-run notification is received in the event feed the BU will automatically print a new Balloon Notification message to the currently-configured printer.

Selecting one or more rows in the grid (by clicking on them) and then pressing *Print Preview* will print an on-screen version of the Balloon Notification(s) for the selected row(s). Selecting one or more rows and pressing *Print* will send Balloon Notification(s) for the selected rows to the currently configured printer (even if the notifications have previously been printed). Whenever a notification has been printed (including as a result of "automatic printing"), the BU places a "Y" indication in the "Printed" column.

The *Print Summary* buttons allow you to print a complete list of balloons for verification, either a list for rows currently selected in the grid or a complete summary of all balloon notifications for the contest up to the moment. This can be used for example to verify that the balloons which should have been sent to a given team are actually present on the contest floor (by sorting on the Team column and then selecting all runs for that team followed by pressing *Print Selected Summary*), or to check that all of the balloons on the contest floor match what they should be.

The "Delivered" column is used to track when balloons have actually been delivered to teams. Each time a runner delivers a balloon, they should select the corresponding row in the grid and click the *Toggle Delivery* button. This will insert a "Y" in the "Delivered" column, providing an easy way to keep track of delivered notifications. The "Y" notification can be removed if desired by selecting the row and clicking "Toggle Delivery" again. Note also that Balloon Notification printouts have a "Delivered By" signature space near the bottom to allow balloon runners to record that they delivered the corresponding balloon.

The *Filter by group* label (just above the main screen grid, on the left side) can be used to restrict the balloons which are processed by the BU. Clicking on the text next to the label (it shows as "All..." in the following screenshot) produces a drop-down list of the currently-defined "groups" (also called "regions") defined in the contest, similar to the following:

#	Run	Region	Team	Time	Firsts	Printed	Delivered
104	132	Latin America	awayn University	19	T	Y	Y
70	95	North America	School of Engineering, Kollam	14	T	Y	Y
586	987	Asia	School of Engineering, Kollam	238		Y	
183	255	Europe	cademy for Science and Technology ...	64		Y	
92	119	Africa and the Middle East	cademy for Science and Technology ...	16	T		
57	82		g University	13	T		
224	322		g University	83			
257	374	F - White	3 Beihang University	94			
364	536	L - Green	3 Beihang University	135			

Disabling one or more groups (by unchecking the corresponding checkbox) suppresses the Balloon Utility's processing of Balloon Notifications for the disabled group(s). This allows the balloon handling crew at contests taking place simultaneously at multiple sites to avoid having to deal with Balloon Notifications for teams which are not at their site.

Note that the definition of the groups in a contest comes from data in the event feed read by the BU; groups cannot be defined within the Balloon Utility.

**Notes** Test or rehearsal contests often have multiple copies of the same problem, e.g. there are 6 problems A-F, but each pair of A and D, B and E, and C and F are identical. If these problems are marked as duplicates by the Contest Control System (by having the same problem UUID) then by default the balloon utility will only print a balloon for first solution (either A or D) from each pair. To disable this behaviour, enable the "Print balloons for problems with matching UUIDs" preference (and restart if there are existing submissions).