



The 2008 Winter Scripting Games Official Program

<http://www.microsoft.com/technet/scriptcenter/funzone/games/default.aspx>

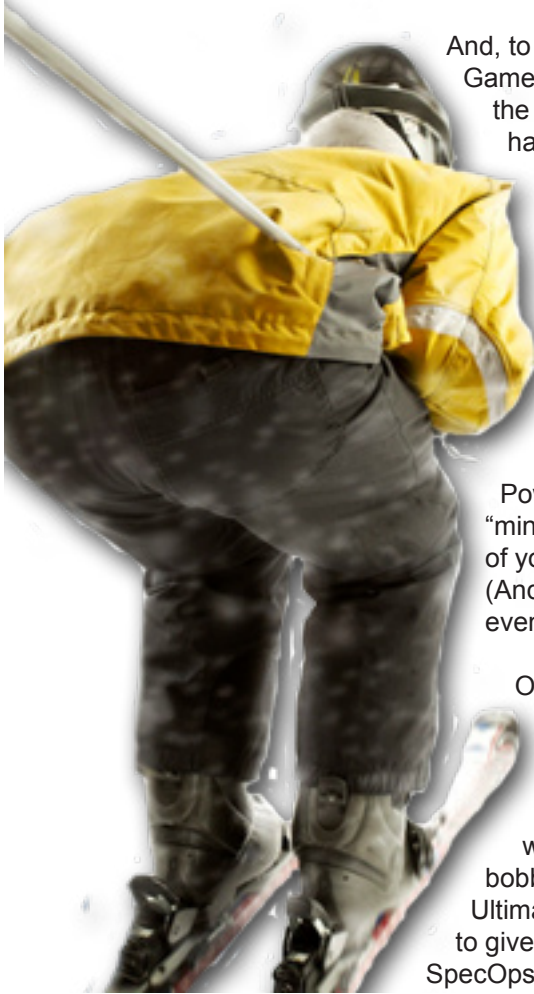


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Welcome to the 2008 Winter Scripting Games!

Three years ago, when the Scripting Guys announced the very first Winter Scripting Games, everyone looked at them and said, "You guys are crazy!" Of course, that had nothing to do with Winter Scripting Games; everyone thought that was a pretty good idea. They just truly believed that the Scripting Guys were—and still are—crazy.



And, to be honest, they just might be right. When we held the inaugural Scripting Games in February 2006 we had no idea what to expect. It was only on Day 1 of the Games, when we received over 300 scripts in the first few hours, scripts we had agreed to test and score, that the Scripting Guys looked at each other and said, "Uh-oh."

You'd be surprised how often the term "Uh-oh" gets uttered around here.

Or maybe you wouldn't be so surprised.

At any rate, the Scripting Games are back for their third go-round, and the 2008 Games promises to be even bigger—and better—than ever. For one thing, we've added a whole new division: entrants can now compete in the Perl division along with the VBScript and Windows PowerShell divisions. In addition, we also have a separate set of "mini-events" (the Scripting Games Sudden Death Challenge) aimed at those of you who finish all 10 of the regular events on the first day of the competition. (And yes, believe it or not, there are people who managed to complete all 10 events on Day 1. We weren't happy with those people, either.)

Oh, and that's not all: we also have other competitions-within-the-competition: the User Group Challenge and the International Challenge. For more information, just keep reading this program.

Let's see, is there anything we're forgetting ... oh, right: prizes. This year we have a ton of cool prizes, beginning with 250 all-new Dr. Scripto bobblehead dolls (the Scripting Games version). We've got 50 copies of Vista Ultimate to give away; we've got Windows PowerShell and VBScript script editors to give away; we've got scripting books to give away; we've even got a copy of SpecOps Command to give away. And, just like last year, everyone who scores at least 60 points in any one division will receive a Certificate of Excellence signed by

the Scripting Guys. Those certificates alone have to be worth at least ... well money isn't everything, right?

At any rate, yes, we have prizes. See the Prizes page in this program for details.

But you know what? All contests have prizes. However, only the Scripting Games give you the opportunity to write scripts, and in VBScript, Windows PowerShell, and/or Perl, to boot. *That's* what makes the Scripting Games unique.

Well, OK, maybe the Publishers Clearinghouse Sweepstakes lets you write scripts, too; we'll have to check on that. We *do* know, however, that the Scripting Games are way more fun than other contests. For example, in the Publishers Clearinghouse Sweepstakes you fill in some form and then sit around waiting for them to send you your \$10 million. How much fun is *that*?

Well, true, now that we think about it, the part about the \$10 million *would* be nice. Of course, you don't get to write any Perl scripts in the Sweepstakes. But, then again

You know what? We're going to go see if we still have the Publishers Clearinghouse entry form lying around. In the meantime, enjoy the Scripting Games!



Jean and Greg
The Microsoft Scripting Guys

FAQ

Frequently-Asked Questions

Any time you stage a world-wide event like the 2008 Winter Scripting Games a whole bunch of questions are bound to arise. Here are the answers to the most frequently-asked questions. If you don't find the answer to your question here, then send an email to scripter@microsoft.com and we'll try to answer it there. But act now: once the Games actually begin (February 15th) it will be very difficult for us to respond to individual questions. (Actually, it will be *impossible* for us to respond to individual questions. But that sounds so harsh, doesn't it?)



How Do I Submit an Entry?

Entries must be submitted via email. For each entry you must submit the script and indicate whether or not you'd like to have your name or nickname published in the Script Center. You'll also have a chance to specify which country (if any) you'd like to represent in the Games, and indicate whether or not you belong to a user group.

It's highly recommended that you submit your entries through the links supplied at the Script Center. Also, make sure you paste your script into the body of the email message itself. *Don't send the script as an attachment!* Our email server will strip off any script file sent as an attachment, which means that your entry will never be received. In other words, paste your script into the body of the email message.

How Do I Participate in the 2008 Winter Scripting Games?

From the Scripting Games home page just click on the division and then on the event of interest. That takes you to a page that: 1) describes the event and what is required to complete it; 2) provides a link to any external resources required to complete the event (such as a particular text file or database file); and, 3) provides a link for submitting your entry.

This year we have six separate competitions, with different submission links for VBScript (Beginners and Advanced); Windows PowerShell (Beginners and Advanced); and Perl (Beginners and Advanced). If you click the wrong link your entry will be submitted using the wrong Subject line. Most likely one of the Scripting Guys will catch the mistake and route your script to the correct category. On the other hand, there are just two Scripting Guys who are charged with testing, and scoring, thousands and thousands of scripts. Because of that, we can't guarantee that we'll be able to catch entries submitted using the wrong Subject line. The best way to avoid that problem? Make sure you click the correct link each time you submit a script.



Can I Enter in More Than One Division?

Yes, you can, and we actually encourage you to try your hand at multiple divisions. (Last year four competitors—Frank Fattizzi, Jakub Niedźwiedz, Jerzy Prusinski, and Russ Pitcher—received perfect scores in all 4 divisions.) We especially encourage long-time VBScript and Perl users to try their hand in the Windows PowerShell Beginners division. PowerShell is definitely the wave of the scripting future, and the Scripting Games provide a fun and easy introduction to this new scripting technology.

In addition to trying different languages you can also enter both the Advanced and Beginners competitions. Needless to say, however, the Advanced events might be a little too, well, advanced for beginning scripters. (Although you never know till you try.) This year, however, the Beginners events are a little more challenging than last year; consequently even the more experienced scripters might get a kick out of trying them.



What If You Make a Mistake When Scoring One of My Events?

Would you believe that in the two previous Scripting Games we never made a single mistake in scoring events?

That's OK; we didn't think you'd believe us in the first place. If you suspect that we made a mistake on one of your events send email to scripter@microsoft.com. We will get back to you, but keep in mind that it might take several days. There are only two of us available to score thousands of scripts, which means we have very little time to read and respond to email. In other words, bear with us. And be patient.



How Do I Earn Points in an Event?

In general, points are earned by submitting a script that — without requiring any modification whatsoever — successfully completes the assigned task. The Scripting Guys will run each script and keep track of the ones that work and the ones that don't. Note that we don't have the time to figure out *why* a particular script doesn't work. That's why it's very important to follow the event instructions exactly as written. If the instructions say that a text file must be placed in C:\Scripts, then make sure your script uses C:\Scripts as the path to that file. If you don't follow the instructions exactly, well

In general, if your script works then you will get all the points for that event; if your script doesn't work then you won't get any points for that event. In some ways that might be a little unfair (no partial credit), but with thousands of scripts to test that's the best we can do.

Please note, too that we can't send you an individual "report card" of any kind. Instead, the only way to know if your script earned points is to check the Standings pages that will be updated every morning. (At the very least; often-times the Standings are updated several times during the day.) A score of 0 points for an event means that the script failed; a blank score means that we either did not receive an entry for that event or that we haven't had time to test your entry. That latter point is important: with the expected number of entrants in the 2008 Scripting Games we cannot promise to test your script on the same day it is received. Here's something you're likely to hear a lot over the course of the Games: bear with us. And be patient.

Can I Enter the Events in Any Order?

Sure. Keep in mind, however, that different events have different deadlines. For example, events 1 and 2 in all divisions must be submitted by 8:00 AM Pacific Standard Time on Wednesday, February 20, 2008; by contrast, events 3 and 4 don't have to be submitted until that Friday (February 22nd). The deadline for each event is posted at the top of each event page.

And yes, you can re-submit entries as well, provided that those resubmissions are received before the event deadlines. What about resubmitting after the deadline? The official answer is: no. Unofficially, well, we'll see. But try not to let it happen, OK?

Are You Giving Away Prizes This Year?

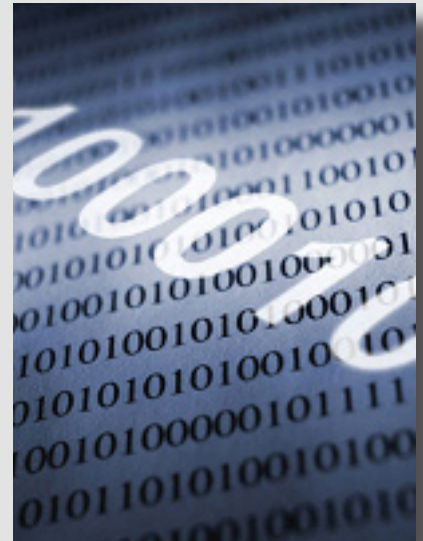
You bet we are; in fact, we're giving away 250 Dr. Scripto bobblehead dolls! (The special Scripting Games edition bobblehead.) In addition, we're also awarding Certificates of Excellence to entrants who score at least 60 points in any one of the six competitions (VBScript Beginners/Advanced; Windows PowerShell Beginners/Advanced; and Perl Beginners/Advanced).

And that's just for starters. See the Prizes page for details.



What Software Do I Need?

Nothing special; instead, you just need to make sure that any scripts you submit will run—and run correctly—on the Scripting Games Test Platform. All of the VBScript scripts will be tested using Windows Script Host 5.6. All of the Windows PowerShell scripts will be tested using Windows PowerShell version 1.0. All of the Perl scripts will be tested using ActivePerl 5.8.8. Again, you don't *have* to use these versions of the software; you just need to make sure that your scripts will run correctly under these versions.



Why Do I Have to Tell You Which Country I Represent?

Actually, you don't *have* to tell us which country you're representing; we just think it's fun to add a little bit of international flavor to the competition. And by "representing" we simply mean, "Which country would you like to play for?" Needless to say, we aren't going to demand proof-of-citizenship in order for you to represent a particular country. Pick the country you live in, pick the country you were born in, pick a country that has a cool national anthem or one that makes really good chocolate. It's up to you.

And yes, make-believe countries are perfectly fine, although they aren't eligible for the International Challenge (see page 8). In fact, if you look at the Team Scores page in this program, you'll see all sorts of make-believe countries that were represented in the 2007 Scripting Games.

Where Can I Get More Information About the Games?

Why, the same place you get all your other scripting information, of course: The TechNet Script Center. The home page for the 2008 Winter Scripting Games is located here: <http://www.microsoft.com/technet/scriptcenter/funzone/games/default.mspx>.

FAQ

Frequently-Asked Questions



Do We Get to See Any of the Scripts Created By Our Fellow Competitors?

We sure hope so. Last year, about midway through the Games, we decided it would be interesting to feature some of the more innovative solutions in a “Scripting Games Spotlight.” Unfortunately, though, by the time we reached that decision it was too late: we hadn’t done a good job of flagging those innovative scripts, and we didn’t have time to go back through the thousands of submissions and track them down. Therefore, we put the Scripting Games Spotlight in the category “Things we’ll be sure to do next year.”

Well, next year is here, and we fully intend to spotlight some of the submissions. We’ll contact the script authors before publishing each script; that will give you an opportunity to either decline the offer or—we hope—to chip in with some comments about the approach you took, and why you took that approach. We’re also going to give you a great opportunity to view even *more* solutions; see the question below for details.

FAQ

Frequently-Asked Questions

PowerShell is Such a New Technology It Would be Great to See More PowerShell Examples. Any Chance of That?

As a matter of fact, there’s a very good chance of that. For the Windows PowerShell Advanced division we’ve recruited 10 PowerShell gurus who’ve each agreed to complete one of the events and then write up a short article explaining how they went about solving the problem. Those 10 experts include:

- Arnaud Petijean, MVP, co-founder of the French PowerShell Community, and author of a new PowerShell book.
- Ben Pearce, creator of the blog Benp’s Guide to Stuff.
- Don Jones, book author and founder of both ScriptingAnswers.com and PowerShellCommunity.org.
- Ed Wilson, trainer, consultant, book author.
- Kirk Munro, Microsoft MVP and author of the blog Poshoholic.
- Marco Shaw, Microsoft MVP and moderator on PowerShellCommunity.org.
- /MoV, aka The PowerShell Guy, and creator of the PowerTab add-in.
- Richard Siddaway, noted blogger and founder/president of the UK PowerShell User Group.
- Scott Hanselman, owner of the Web site Scott Hanselman’s ComputerZen.com.
- Thomas Lee, blogger and prolific contributor to the Community Content on MSDN.

For more information about these experts see the Scripting Games home page: <http://www.microsoft.com/technet/scriptcenter/funzone/games/default.aspx>.



The User Group Challenge

You know, nothing in life brings people together the way the Scripting Games do. The Games have long been known for—what's that? How do we know that the Scripting Games brings people together? Well, to be truthful, we don't. But we're about to find out.

That's because, for the 2008 Games, the Scripting Guys are teaming with *TechNet Magazine* to bring you the User Group Challenge, an opportunity for user groups to come together as one. (And, not coincidentally, win some prizes and kick some butt along the way.)

What we're looking for is the user group that, on a percentage basis, gets the most members to enter the Scripting Games. What does that mean? Well, suppose two users groups (User Group A and User Group B) take part in the Challenge. User Group A has 20 members, and 6 of them (30 percent) enter the Scripting Games; User Group B has 100 members and 27 of them (27 percent) enter the Scripting Games. Who wins the 2008 Winter Scripting Games User Group Challenge? You got it: User Group A, 30 percent to 27 percent.

When the Games are over we'll tally up the results and award the grand prize: the winning user group will get a trophy and a write-up in the Script Center, and each member of the group who takes part in the Games will receive an individual award (of a to-be-determined nature). Best of all, you don't have to do anything special to enter (or to win). Just enter the Games as your normally would, making sure to include the name of your user group when submitting your entries. Oh, and encouraging fellow members of your user group to enter the Games might help as well. That's up to you.

But what if you'd like to work together as a group on your Scripting Games entries? To tell you the truth, we think that would be great. If you want to get together as a group and tackle the events in the Scripting Games, well, that's perfectly fine with us; in fact, we encourage people to get together and work as a group on the Games. Just remember that we aren't set up to accept group submissions; instead, each group member must submit a separate entry. (That is, if three of you work together on an event, each of you must submit a separate—albeit identical—entry.) Separate entries are the only way we can track numbers for the Challenge, and the only way to ensure that everyone has a chance to win a Dr. Scripto bobblehead doll, a copy of Windows Vista, or any of our other prizes.

The International Challenge

In Scripting Games 1 and 2 we gave everyone the opportunity to represent a country of their choice while competing in the Games. And while we *did* keep track of the so-called Team Scores, that's about all we did with this appeal to national pride. That will definitely *not* be the case with the 2008 Winter Scripting Games.

With the 2008 Games we're introducing the International Challenge. Using a formula to be published before the Games begin, we're going to determine which country had the best participation in the Games, on a per-capita basis. (In other words, which country had more entrants than you'd expect them to have.)

And then what? Well, when the Games are over, ~~we'll send everyone in the winning country a check for \$1 million!~~

OK, maybe our budget doesn't *quite* allow for that. (And, apparently, the Scripting Editor won't let us say it anyway.) However, during the month of April, 2008 we *will* dedicate the Script Center to the winning nation, doing whatever we can (folklore, recipes, songs, facts and figures, etc.) to recognize this country and its people. Admittedly, it's not quite the same as \$1 million. But it *is* the next-best thing.

Sort of.





Schedule

Event 1

Posted: 2/18/2008
Due: 2/19/2008 3:00 PM PST

Event 2

Posted: 2/19/2008
Due: 2/20/2008 3:00 PM PST

Event 3

Posted: 2/20/2008
Due: 2/21/2008 3:00 PM PST

Event 4

Posted: 2/21/2008
Due: 2/22/2008 3:00 PM PST

Event 5

Posted: 2/22/2008
Due: 2/25/2008 3:00 PM PST

Event 6

Posted: 2/25/2008
Due: 2/26/2008 3:00 PM PST

Event 7

Posted: 2/26/2008
Due: 2/27/2008 3:00 PM PST

Event 8

Posted: 2/27/2008
Due: 2/28/2008 3:00 PM PST

Event 9

Posted: 2/28/2008
Due: 2/29/2008 3:00 PM PST

Event 10

Posted: 2/29/2008
Due: 3/3/2008 3:00 PM PST

The Scripting Games Sudden Death Challenge

One interesting fact about the Scripting Games is that we attract a very diverse audience, an audience that includes everyone from beginners just hoping to complete in an event or two to experienced scripters who manage to run through all 10 events in a single day. (And yes, as we noted earlier, in the 2007 Scripting Games we had a couple of people who completed all 10 events in a division on the opening day of the Games.)

In part, it was our desire to find something to keep these “super scripters” occupied that led to the creation of the Sudden Death Challenge. The Sudden Death Challenge is a series of 10 “bonus” events which will be scored, and tracked, separately from the events that make up the heart of the Scripting Games. These bonus events differ in several ways from the standard Scripting Games events. For one thing, they can be solved using any of the official Scripting Games languages (VBScript, Windows PowerShell, or Perl); there are no separate divisions. Besides, you might not even *need* to write a script in order to complete the event; instead, you might be asked to solve a puzzle or simply provide some facts about system administration scripting. Needless to say, that’s another difference between the bonus events and the regular Scripting Games events.

Perhaps most important, these events will not all be posted on the same day; instead, the Sudden Death Challenge events will be posted one at a time and—discounting weekends—be up for only a day or so. (See the schedule to the left for more details.) Among other things, that means you’ll need to come back pretty much every day if you hope to earn a perfect score in the Sudden Death Challenge. That’s all there is to it.

Oh, right: what *is* the deal with the name Sudden Death Challenge? Well, originally, we thought this was going to be a fight-to-the-death matchup: as soon as you missed a deadline or otherwise failed to complete an event you would be eliminated from the Challenge. In that way, we’d methodically winnow out the competition until only the best of the best were left standing. Sudden Death.

Like we said, that was our original thought; upon further reflection, however, we changed our minds, deciding that it might be a bit too much to expect people to come back to the Script Center every day. Therefore, you’re now free to enter as many (or as few) of the events as you like, with the winners determined by whoever earns the most points, whether or not they complete each and every event. (All events are worth 1 point, with 10 points representing a perfect score.) So, yes, we changed the rules; however, we liked the sound of Sudden Death Challenge so much that we decided to keep the name anyway.

At any rate, take a look at the Challenge event each day (the first event will be posted on Monday, February 18th); try the ones you want to try and, well, don’t try the ones you don’t want to try. We’ll keep track of the scores and, when all is said and done, we’ll award a prize to the winners. Most important, this time *no one* can complete all 10 events on the first day.

Or at least we don’t think so, anyway.

You May Already Be a Winner!

OK, so, maybe we haven't been entirely honest with you when it comes to the 2008 Winter Scripting Games. After all, we've been telling you that the Scripting Games are all about having fun. Well, we need to clarify that just a little: the Scripting Games are *mostly* about having fun. But they're also about the chance to win some great prizes.

Ah, we knew that would get your attention. What kind of prizes can you win, and how can you win them? Let's take a peek.

2008 Winter Scripting Games Certificates of Excellence

Admittedly, all the other prizes we're giving away are worth more money than the Certificates of Excellence. Still, these are the prizes that matter the most. Why? Because you actually have to earn them. All the other prizes are given away as part of a random drawing: anyone who enters at least one event in the Games is eligible to win. That's not the case with the Certificate of Excellence, however. Instead, there's only one way to get one of these babies: you must score at least 60 points in any one division (e.g., Beginners Perl). Do that, and you'll earn a Certificate of Excellence, signed by the Scripting Guys. And yes, we'll send you as many certificates as you earn; if you enter all six divisions and score at least 60 points in each one then we'll send you six different Certificates of Excellence.

Dr. Scripto Bobblehead Dolls (Special Scripting Games version)

Last year, when we handed out Dr. Scripto bobbleheads as part of the Scripting Games we said to ourselves, "How will we ever come up with a prize better than Dr. Scripto bobbleheads?" Well, as it turned out, we couldn't; therefore, we decided to give out bobbleheads (250 of them) again this year. Of course, this year's version is special: it's a customized Scripting Games bobblehead featuring Dr. Scripto in a toga, wearing a laurel wreath around his head, and carrying a torch. Believe it or not, it's even better than it sounds.

Sapien Books and Software

Sapien software is well-known in the scripting world for their incredible products, so it probably shouldn't come as any surprise that Sapien is offering some incredible prizes as part of the Scripting Games. For starters, they're giving away two copies of Primal Script Professional, a multi-language script editor/development environment that will knock your socks off. (Note: Scripting Guys not responsible for cold feet.) And that's just for starters. They're also giving away two copies of their VBScript debugging tool Primal Scope. And then there are the books, including 4 copies of Windows PowerShell v1.0: TFM (2nd edition) by the

legendary Don Jones and Jeffrey Hicks. And did someone say flying monkeys? Hey, it wouldn't be a Scripting Games without flying monkeys, now would it?

Shell Tools Script Editors

Can't get enough of script editors? Well, in that case, we have good news for you: the folks at Shell Tools are giving away 5 copies of their PowerShell suite, which includes copies of both PowerShell Analyzer and PowerShell Plus. (Do you really need two different PowerShell script editors? Let's put it this way: just wait until you see what PowerShell Analyzer and PowerShell Plus can do.) And if that's not enough, they're also giving away 5 copies of System Scripter, one of the coolest and most innovative VBScript editors you'll ever run across.

SpecOps Command

SpecOps Command is an incredible piece of software that you have to see to believe: it manages to fully incorporate Windows PowerShell and Group Policy, giving you a management system that lets you automate just about anything you could ever hope to automate. (Just be careful if you *do* take a look at it; Windows PowerShell architect Jeffrey Snover has been quoted as saying that when he saw it the software "blew the top of his head off." Ouch.)

That's cool. Even cooler is the fact that Special Operations software is giving away a free, fully-licensed version of SpecOps Command as part of the 2008 Winter Scripting Games!

Ouch. We think we just blew the tops of our heads off.

And yes, VBScripters, SpecOps Command also works with VBScript as well as with PowerShell.

Microsoft Windows Vista Ultimate

So is Windows Vista truly the ultimate operating system? Well, it must be: after all, it has the word "ultimate" right in the name! And you just might get a chance to find out, because we're giving away 50 copies of Windows Vista Ultimate (with a suggested retail price of \$399).

Needless to say, this is very cool. And remember, you could win one of these copies of Windows Vista Ultimate just by entering a single event in the 2008 Winter Scripting Games.

Other than the Certificates of Excellence, all the prizes are awarded via random drawing. Put that way, why *wouldn't* you enter the Games?



The PowerShell host of choice for IT professionals and system administrators



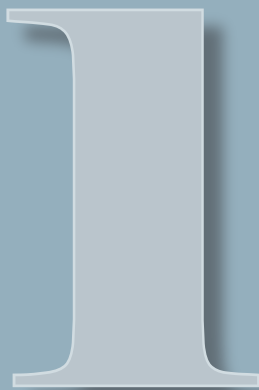
PowerShell Analyzer and PowerShell Plus are rich interactive environments for Windows PowerShell. They have all the typical editor and IDE functionality that you would expect when working on a modern language, but focus on the real time interactive experience as if you were at the console, helping you compose and debug the commands you want to use and giving you rich graphical visualization of the results.

www.powershell.com

Beginners Events

The 2008 Winter Scripting Games include two separate competitions, one aimed at beginning scripters and the other at more advanced script writers. Each competition includes three separate subdivisions: one in which all the scripts must be written in VBScript; one in which all the scripts must be written in Windows PowerShell; and one in which all the scripts must be written in Perl. The individual events are the same in all three divisions; however, due to differences between the languages there will occasionally be different instructions for the divisions. Before submitting an entry make sure you are looking at the instructions for the appropriate division.

Following are brief descriptions of the 10 events in the Beginners Division. Complete instructions for all the events—including information on submitting the event to the competition—will be posted in the Script Center no later than 8:00 AM Pacific Standard Time on Friday, February 15, 2008.



Pairing Off

Points Available: 5

Deadline: Wednesday, February 20, 2008 (8:00 AM PST)

In Pairing Off, competitors will be given a series of five playing cards and asked to determine the number of pairs.



True Type

Points Available: 10

Deadline: Wednesday, February 20, 2008 (8:00 AM PST)

In the True Type event competitors are asked to read a series of keys from the Microsoft Windows system registry.



Let's Get Together

Points Available: 10

Deadline: Friday, February 22, 2008 (8:00 AM PST)

In Let's Get Together, competitors must read all the text files in a folder, copy the first line of each file, and then paste all those lines into a new text file.



Count Yourself In

Points Available: 5

Deadline: Friday, February 22, 2008 (8:00 AM PST)

Count Yourself In involves reading from a text file, a text file that just happens to be a script.



What's the Difference?

Points Available: 10

Deadline: Tuesday, February 26, 2008 (8:00 AM PST)

In What's the Difference? competitors will be asked to read a parameter from a command line and perform date calculations based on that parameter.



Coffee Break

Points Available: 10

Deadline: Tuesday, February 26, 2008 (8:00 AM PST)

In Coffee Break, competitors will be asked to read from a text file and find unique entries within that file.



Squashing Bugs

Points Available: 10

Deadline: Thursday, February 28, 2008 (8:00 AM PST)

In Squashing Bugs, competitors will be required to debug a script that contains a number of errors.



Random Guess

Points Available: 15

Deadline: Thursday, February 28, 2008 (8:00 AM PST)

In Random Guess, competitors will be asked to generate a random number and allow the user to try to guess that number.



Pool Party

Points Available: 15

Deadline: Monday, March 3, 2008 (8:00 AM PST)

In Pool Party, competitors will be asked to read from a database and make some simple calculations based on the data in that database.



Bowling

Points Available: 10

Deadline: Monday, March 3, 2008 (8:00 AM PST)

In Bowling, competitors will be given the score card for a 10-frame bowling game and asked to calculate the score.

Advanced Events

The 2008 Winter Scripting Games include two separate competitions, one aimed at beginning scripters and the other at more advanced script writers. Each competition includes three separate subdivisions: one in which all the scripts must be written in VBScript; one in which all the scripts must be written in Windows PowerShell; and one in which all the scripts must be written in Perl. The individual events are the same in all three divisions; however, due to differences between the languages there will occasionally be different instructions for the divisions. Before submitting an entry make sure you are looking at the instructions for the appropriate division.

Following are brief descriptions of the 10 events in the Advanced Division. Complete instructions for all the events—including information on submitting the event to the competition—will be posted in the Script Center no later than 8:00 AM Pacific Standard Time on Friday, February 15, 2008.



Could I Get Your Phone Number?

Points Available: 10

Deadline: Wednesday, February 20, 2008 (8:00 AM PST)

In Could I Get Your Phone Number? competitors are given a phone number and then—using the letters found on a standard phone dial—must construct a word in which the letters correspond to the numbers in the phone number.



Skating on Thin Ice

Points Available: 10

Deadline: Wednesday, February 20, 2008 (8:00 AM PST)

In Skating on Thin Ice competitors must write a script that determines the winner of a figure skating competition.



Instant (Runoff) Winner

Points Available: 20

Deadline: Friday, February 22, 2008 (8:00 AM PST)

In Instant (Runoff) Winner, competitors must write a script that determines the winner of an “instant runoff” election.



Image is Everything

Points Available: 5

Deadline: Friday, February 22, 2008 (8:00 AM PST)

In Image is Everything, competitors must write a script that displays a nicely-formatted calendar onscreen.



You Call That a Strong Password?

Points Available: 10

Deadline: Tuesday, February 26, 2008 (8:00 AM PST)

In You Call That a Strong Password? competitors must write a script that, based on the supplied criteria, determines the strength of a password.



Prime Time

Points Available: 5

Deadline: Tuesday, February 26, 2008 (8:00 AM PST)

In Prime Time, competitors must write a script that calculates – and displays – all the prime numbers between a designated starting and ending point.



Play Ball!

Points Available: 10

Deadline: Thursday, February 28, 2008 (8:00 AM PST)

In Play Ball! competitors must write a script that schedules all the games for a round-robin baseball tournament.



Making Beautiful Music

Points Available: 15

Deadline: Thursday, February 28, 2008 (8:00 AM PST)

In Making Beautiful Music, competitors must write a script that can compile a music playlist listing songs to be burnt to a CD.



You're Twisting My Words

Points Available: 5

Deadline: Monday, March 3, 2008 (8:00 AM PST)

In You're Twisting My Words, competitors must write a script that reverses the letter in each word in a text selection, all the while maintaining the same word order in that selection.



Blackjack!

Points Available: 10

Deadline: Monday, March 3, 2008 (8:00 AM PST)

In Blackjack! competitors must write a script that deals and plays a single hand of Blackjack (Twenty-One).



2008 Winter Scripting Games Schedule

Friday, February 15, 2008

Opening ceremonies: all the events in all the divisions are posted to the TechNet Script Center.

Monday, February 18, 2008

Sudden Death Challenge 1 is posted to the TechNet Script Center.

Tuesday, February 19, 2008

Sudden Death Challenge 2 is posted to the TechNet Script Center.
Sudden Death Challenge 1 solution due by 3:00 PM PST.

Wednesday, February 20, 2008

Sudden Death Challenge 3 is posted to the TechNet Script Center.
Sudden Death Challenge 2 solution due by 3:00 PM PST.

Deadline for completing Event 1 (all divisions) is 8:00 AM PST.
Deadline for completing Event 2 (all divisions) is 8:00 AM PST.

Event 1 solution (all divisions) posted to the TechNet Script Center.
Event 2 solution (all divisions) posted to the TechNet Script Center.

Thursday, February 21, 2008

Sudden Death Challenge 4 is posted to the TechNet Script Center.
Sudden Death Challenge 3 solution due by 3:00 PM PST.

Friday, February 22, 2008

Sudden Death Challenge 5 is posted to the TechNet Script Center.
Sudden Death Challenge 4 solution due by 3:00 PM PST.

Deadline for completing Event 3 (all divisions) is 8:00 AM PST.
Deadline for completing Event 4 (all divisions) is 8:00 AM PST.

Event 3 solution (all divisions) posted to the TechNet Script Center.
Event 4 solution (all divisions) posted to the TechNet Script Center.

Monday, February 25, 2008

Sudden Death Challenge 6 is posted to the TechNet Script Center.
Sudden Death Challenge 5 solution due by 3:00 PM PST.

Tuesday, February 26, 2008

Sudden Death Challenge 7 is posted to the TechNet Script Center.
Sudden Death Challenge 6 solution due by 3:00 PM PST.

Deadline for completing Event 5 (all divisions) is 8:00 AM PST.
Deadline for completing Event 6 (all divisions) is 8:00 AM PST.

Event 5 solution (all divisions) posted to the TechNet Script Center.
Event 6 solution (all divisions) posted to the TechNet Script Center.

Wednesday, February 27, 2008

Sudden Death Challenge 8 is posted to the TechNet Script Center.
Sudden Death Challenge 7 solution due by 3:00 PM PST.

Thursday, February 28, 2008

Sudden Death Challenge 9 is posted to the TechNet Script Center.
Sudden Death Challenge 8 solution due by 3:00 PM PST.

Deadline for completing Event 7 (all divisions) is 8:00 AM PST.
Deadline for completing Event 8 (all divisions) is 8:00 AM PST.

Event 7 solution (all divisions) posted to the TechNet Script Center.
Event 8 solution (all divisions) posted to the TechNet Script Center.

Friday, February 29, 2008

Sudden Death Challenge 10 is posted to the TechNet Script Center.
Sudden Death Challenge 9 solution due by 3:00 PM PST.

Monday, March 3, 2008

Sudden Death Challenge 10 solution due by 3:00 PM PST.

Deadline for completing Event 9 (all divisions) is 8:00 AM PST.
Deadline for completing Event 10 (all divisions) is 8:00 AM PST.

Event 9 solution (all divisions) posted to the TechNet Script Center.
Event 10 solution (all divisions) posted to the TechNet Script Center.

Monday, March 10, 2008

Prize drawing. Winners will begin to be notified on March 10; note that this process will likely take several days.



2008 Winter Scripting Games Schedule

The Scripting Languages Trivia Test

Sure, you know everything there is to know about using scripting languages. But do you know everything there is to know about the origin and development of those scripting languages? Well, there's only one way to find out, isn't there? (The answers are on page 29 in this program.)

1. Who invented Perl?

- A. Larry Wall
- B. A team of researchers at Xerox Parc
- C. Jeffrey Snover
- D. Bill Gates and Paul Allen

2. True or False: The word Perl can be found in the Oxford English Dictionary.

3. What year was Perl 1.0 released?

- A. 1992
- B. 1954
- C. 1987
- D. 2001

4. After Microsoft began work on Visual Basic 1.0 (which would beget VBScript) the project was given what code name?

- A. Project Thunder
- B. Snowball
- C. Frosting
- D. Touchdown

5. What do the letters in Perl stand for?

- A. Nothing; Perl is not an acronym.
- B. Performance Enhancing Relational Language.
- C. Paul, Eileen, Roger, and Lily (the names of the developer's children)
- D. Programming: Easy, Rational, Logistical

6. Before being released as Windows PowerShell, Microsoft's latest scripting technology was known as Monad. Why?

- A. Monad is the name of a much-beloved hobbit in Lord of the Rings
- B. Monad was a much-beloved character in the children's TV show Thunderbirds
- C. The project team just liked the sound of the word
- D. Monads are Leibniz's term for the fundamental unit of existence that aggregates into compounds to implement a purpose.

7. True or False: VBScript was released before Visual Basic for Applications.

8. Who is known as the "Father of Visual Basic"?

- A. Larry Wall
- B. Alan Cooper
- C. Bill Gates
- D. Paul Allen

9. In what city was Windows PowerShell 1.0 officially announced?

- A. Redmond, WA
- B. Barcelona, Spain
- C. Houston, TX
- D. Montreal, Canada

10. Visual Basic began life as a replacement for the Windows command shell. Before long, however, that shell functionality was merged with what programming language?

- A. C
- B. Perl
- C. QuickBASIC
- D. Monad

11. Visual Basic began life as a replacement for the Windows command shell. What did Windows PowerShell begin life as?

- A. A replacement for Visual Basic for Applications
- B. A replacement for the Windows command shell
- C. A "lite" version of Visual Studio
- D. A new scripting language for Web developers

12. Which of the following is not a scripting language?

- A. HaskellScript
- B. Groovy
- C. BeanShell
- D. Osgood 2



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*"...when I finally understood
what they were doing, the top
of my head exploded."*

Jeffrey Snover

Windows Management Partner Architect

Read more about Jeffrey's impressions of Specops
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Profiles in Perfection

When we first posted the events for the 2007 Winter Scripting Games we were concerned that maybe we were asking too much: that maybe we had created too many events, maybe those events were a little too hard for people to complete in two weeks time. How valid were those concerns? Well, in answer to that question, just take a look at the number of people who earned at least one perfect score in the 2007 Games. We'll never underestimate the scripting community again—promise!

PowerShell Advanced

/NoW
The Netherlands

Aaron Peterson
USA

Alex Chan
USA

Alex Duckworth
Australia

Alistair Young
USA

Andy Schneider
USA

Arnaud PETITJEAN
France

Frank Fattizzi
USA

Gaurhoth
USA

Gilles LAURENT
France

Jacob Gable
USA

Jakub Niedźwiedź
Poland

Jason Clement
USA

Jason Joy
USA

Jeremy Clore
USA

Jerzy Prusinski
Poland

Joseph Tilley
USA

Kasey Nichols
USA

Marco Shaw
Canada

Mark Sheppard
United Kingdom

Mike Holden
Albania

Nagy János
Hungary

Rhoderick Milne
United Kingdom

Richard Siddaway
England

Robin LEMESLE
France

Russ Pitcher
England

Sanket Shetye
India

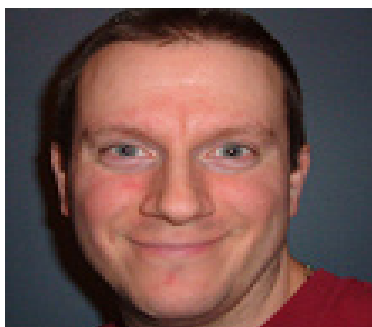
Simon Dalling
England

Stefan Suesser
Germany

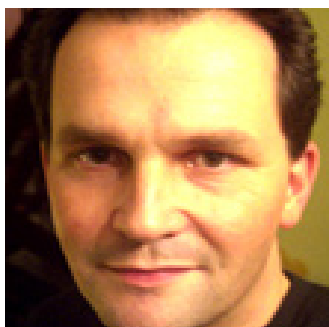
Steve Kulyk
Canada

Thorbjörn Sjövald
Sweden

Tobias Reinwald
Germany



Marco Shaw



Stefan Suesser



Richard Siddaway

Umesh Chandra Thakur
India

Yves PASCAULT
France

PowerShell Beginners

Alistair Young
USA

Brian S.
USA

Chris H (C2)
USA

Curtis J. O'Connell
USA

Dan George Filimon
Romania

Dan Richardson
USA

Dennis G. Landsem
Norway

Erik Renes
The Netherlands

Frank Fattizzi
USA

gln
Sweden

Imran Kamaluddin
United Kingdom

Jakub Niedźwiedź
Poland

Jerzy Prusinski
Poland

Jim Wells
USA

joseomjr
USA

Keun Hyung, Lee
South Korea

Marco Rijnbeek
the Netherlands

Matheesha Weerasinghe
United Kingdom

Mike Holden
Albania

Mitchel Smedts
Belgium

njn
Sweden

Reinhard Lehrbaum
Austria

Russ Pitcher
England

ScooterK
USA

Steve Kulyk
Canada

Vinod Panikar
Singapore

Yury Bich
Belarus

VBScript Advanced

Alan Dunbar
Canada

Alan Mosley
Australia

Alan Roberson
USA

Alex Duckworth
Australia

AlioTheFool
USA

Ben Simkins
Switzerland

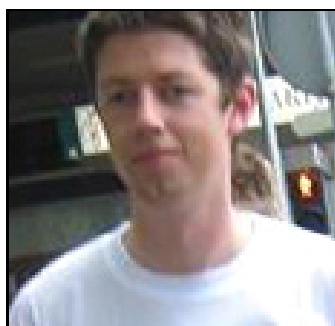
Blackhawk
Canada

Bob Stammers
No Affiliation

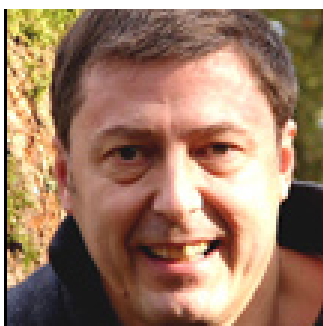
Chris Bland
Canada

Chris Osborne
USA

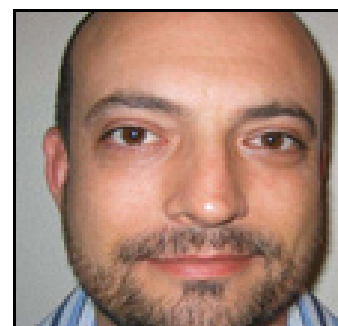
Christian Pfeiffer
Austria



Erik Renes



Simon Daling



Chris Bland

Clifford Williamson, III
USA

Clinton Huff
USA

Courtney Newman
USA

Craig Naumann
Australia

Curtis J. O'Connell
USA

Dan Richardson
USA

Darren Malik
USA

Dave E
United Kingdom

Dave Rosen
Israel

Dave Wyatt
USA

David Coles
Australia

Dennis G. Landsem
Norway

djayman
Australia

DrBayer
Vandyland

Ed Z
USA

Eelco Ligtoet
The Netherlands

Eric Payne
USA

Erik Renes
The Netherlands

Fábio de Paula Junior
Brazil

Francis de la Cerna
USA

Frank den Haan
The Netherlands

Frank Fattizzi
USA

Fred Jenkins
USA

Geoffrey Grinton
Australia

Gilles LAURENT
France

Gordon Yuen
Bmraarykduesn

Gyorgy Nemesmagasi
Hungary

H. S.
Denmark

H2Data
Australia

Helder Sepulveda
Cuba Libre

Homer Yu
ITExpert

Hong Quan YU
China

Imran Hashim
Pakistan

Jakub Niedźwiedź
Poland

James Ward
USA

Jan Kuvaja
Sweden

Jarno Mäki
Finland

Jason Clement
USA

Jason Joy
USA

Jean - JMST
Belgium

Jerry G
USA

Jerzy Prusinski
Poland



Marcus Farmer



Tim Laqua



Alan Mosley

John Medwid
DSG

John Reichenbach
USA

Josh Bradbury
Kazakhstan

Luis Martín Caballero
Spain

Marcus L. Farmer
USA

Mark B
USA

Matthew R. Davis
USA

Matto
Australia

Maureen Farrell
USA

Michaela Doil
Germany

micra
Poland

Mike Holden
Albania

Miles Willmek
Canada

MrRat
USA

Nick Ford
England

Patrick Donahue
USA

Patrick O'Connell
USA

Paul M Marshall
Australia

Peacerich Timecastle
Sweden

Robert Moore
New Zealand

Russ Pitcher
England

Russell Smith
USA

ScriptingGuys-TargetChapter
Targetopia

Stefan Suesser
Germany

Stephen Coombes
USA

Steve Kulyk
Canada

SUF
Hungary

Tim Laqua
USA

Tobias Reinwald
Germany

wa ayoub
No Affiliation

Willem van Egmond
The Netherlands

VBScript Beginners

Andre Starkloff
Germany

Angie
USA

Anoop Puthan Veetil
India

Anthony Guimelli
USA

Ben Clifford
United Kingdom

Bizzy
No Affiliation

Carlos A. Silva Jr.
Brazil

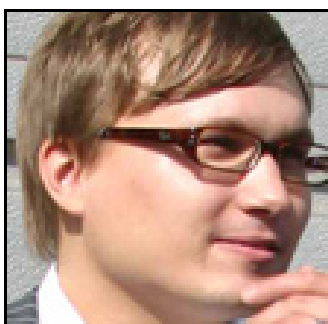
Chris Hollenbeck
USA

Christian Pfeiffer
Austria

Dave E
United Kingdom



Imran Hashim



Jarno Mäki



Jean JMST

David Coles
Australia

David Moravec
Czech Republic

Dennis Weston
USA

Dent
Canada

Elena Cozzarolo
Italy

Frank Anstey
Canada

Frank Fattizzi
USA

Geoffrey Grinton
Australia

Helder Sepulveda
Cuba Libre

Hong Quan YU
China

Jakub Niedźwiedź
Poland

Jean-Marc Clement
Mauritius

Jerry G
USA

Jerzy Prusinski
Poland

Jhonny Yamaniha
Peru

John Reichenbach
USA

joseomjr
USA

Karen Elliott
USA

Luis Martín Caballero
Spain

Matheesha Weerasinghe
United Kingdom

Matthew R. Davis
USA

Matto
Australia

Michael Mize
USA

Muhammad Faheem Sarani
Pakistan

Nathan Lare
USA

Pake73
Sweden

Rafael T
Ryukyu

Ralf Bittiger
Germany

Rob Allan
Canada

Rod Stewart
USA

Russ Pitcher
England

Ryan Mich
USA

S. Oxford
USA

Sankar Muthaiah
India

ScriptBon
Canada

Seth Levenberg
No Affiliation

Tony Colgrove
USA

Tracy Roberts
Australia

Vinod Dadhe
India

Willem van Egmond
The Netherlands

Woody
Jamaica



Muhammad Faheem Sarani



David Moravec



Sankar Muthaiah



David Coles



Robert Moore



Anoop Puthan Veetil



Elena Cozzarolo



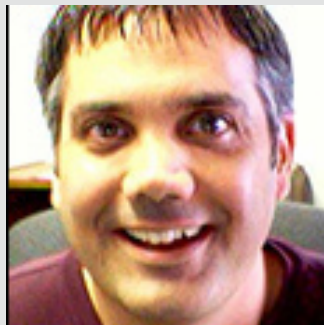
Helder Sepulveda



Eric Payne



Geoffrey Grinton



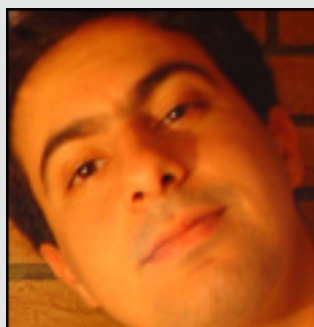
Frank Fattizzi



Fábio de Paula



Jeremy Clore



Carlos Alberto



David Bayer

2007 Team Scores



The international aspect has always been an integral part of the Scripting Games. In the inaugural Scripting Games (2006) we had competitors representing 51 countries; in 2007, we had competitors representing 64 countries. Granted, some of those countries might not be real countries—has anyone been able to find Cubicletania on a map?—but hey, that's part of the fun: you can choose to play for any country you wish. (If only the Olympics worked that way, huh?) In 2007, 7 countries (well, 7 *pseudo*-countries, anyway) tied for first place with an average score of 100. Now, admittedly, that average score was somewhat easier to achieve thanks to the fact that each country had only a single representative. (Apparently Bmraarykduesn isn't as well-populated as we thought.) Among the countries that had at least 10 entrants, Belgium took home the gold medal with an average score of 91.

And they make great waffles and chocolate there, too.

Complete team results are shown on the next page.

100	ITExpert	66	The Netherlands
100	Targetopia	66	Brazil
100	Mauritius	66	Austria
100	Kazakhstan	65	Russia
100	DSG	65	Jamaica
100	Vandyland	64	Singapore
100	Cuba Libre	64	England
100	Bmraarykduesn	63	Australia
99	Albania	63	Uruguay
97	Finland	62	USA
97	Pakistan	61	India
95	Malawi	61	United Kingdom
95	Wales	59	France
95	Nicaragua	59	Czech Republic
94	Spain	58	United Republic Of Writonia
93	PRC	58	South Africa
92	Dataland	55	Cubicletania
92	Switzerland	53	Norway
91	Malaysia	52	Italy
89	Hungary	50	Macedonia
89	Belgium	48	No Affiliation
87	Ryukyu	43	Denmark
85	Nigeria	39	New Zealand
84	Poland	38	Romania
84	Sweden	33	Scotland
84	Hyrule	31	Philippines
82	Puerto Rico	31	Croatia
81	Qatar	29	Sinaloa
80	Kara-Tur	26	Egypt
79	Canada	25	Luxembourg
77	Belarus	23	Thailand
77	Germany	20	Turkey
76	Israel	20	Hohenwald
76	Winterfell	20	Gerald Smith
75	Vanuatu	18	Colombia
74	Guatemala	17	Kurdistan
72	Ireland	15	Iceland
72	South Korea	15	Mexico
71	Slovenia	15	Andorra
70	Japan	15	United Arab Emirates
69	Ukraine	5	Deutschland
68	China	5	Zimbabwe
66	Peru		

Training for the Winter Scripting Games

To tell you the truth, we sort of like the training plan put together by the legendary Mr Rat and friends. According to Mr Rat, he and his friends are preparing for the Games by “drinking heavily and polishing our bobbleheads.” Now *that’s* training!

Note. The Scripting Editor has pointed out that the Scripting Guys do not condone or encourage heavy drinking. That one we can go along with: drink responsibly. However, she also insists that the Scripting Guys do not condone bobblehead polishing. We’re going to have to think about that one a little.

At any rate, the point is that you don’t really need to do much (if anything) to prepare for the Games; about all you really need to do is read through the FAQ portion of this program (to make sure you understand the policies and procedures) and then show up at the Script Center on Friday, February 15th. Still, if you’re worried about how to best get ready for the Scripting Games, well, here are a few suggestions:

Take a look at the 2006 and 2007 Games. The Events from the 2006 and 2007 Winter Scripting Games are still available online. (Go to <http://www.microsoft.com/technet/scriptcenter/funzone/games/default.mspx> and click the appropriate link.) Read through the instructions for an event or two; those will give you a pretty good idea of what to expect during the 2008 Games. While you’re at it, you might even *try* an event or two; the solutions are all available online as well.

Remember to test your scripts before you send them in. Thousands and thousands of scripts will be submitted for the Scripting Games, and the Scripting Guys will test each and every one of those scripts. What we won’t do is debug those scripts in any way. Instead, we’ll run them and see if they work. If they do, you get the points. If they don’t, well, not only will you not get the points, but we won’t make any effort to try and figure out *why* they didn’t work.

Granted, sometimes scripts fail because the approach is all wrong. All-too-often, however, scripts fail because of a simple mistake. Time and time again last year we heard

from people who wrote a script and tested it and then, just before submitting it, made a minor tweak to the code. Tweaking the code is fine, but make sure you test the modified script before sending it in; don’t just assume it’s OK. Last year several people added a comment to their script, but failed to include the comment character. Consequently, the script failed when we ran it. A very large number of the mistakes we see could have been caught—and fixed—before the script was submitted.

Use Select All when copying your scripts. We realize that we don’t have a very good submission process but—for the time being, anyway—it’s the only submission process we have. As you know, in order to submit a script you must copy the code and then paste that code into the body of an email. Most people simply select the script code with the mouse, and most of the time that works. However, it’s not unusual for people to fail to select the last line of code. Is that a problem? You might say that.

The solution? Use Select All or Ctrl+A or whatever command your script editor uses to select *all* the code in your script.

If possible, send your emails in plain-text mode. Back in the good old days emails came

across *only* as plain-text. Now we have fancy HTML-based emails that can include graphics, sounds, animations, etc. Those emails look pretty cool, but they can also play havoc with your script code. To test a script the Scripting Guys must copy the script from your email, paste it into Notepad, then run the script. With plain-text, this copy/paste operation works pretty well; with HTML or RTF-based email that’s not always the case. Instead, we often end up with line break problems, the most-common being a script that comes across as one single, unbroken line of code. Usually we’re able to fix these problems; however, we can’t always guarantee that we put the linebreaks in the correct spots. Sending email as plain-text helps us avoid most of these problems.

Most important, don’t worry about it. After all, the Scripting Games are supposed to be *fun*. Show up, have a little fun, and maybe learn something new about scripting. And who knows? With any luck maybe next year you’ll have a bobblehead of your own to polish.



What People Said About the 2007 Winter Scripting Games

I just started to learn to script and I learned a great deal. It really motivates.

I knew the Games would serve as a motivational factor to get me to learn more about the subject.

You guys are putting on a great set of games! They're actually a great motivator for getting me learning and actually writing scripts.

These games were the perfect training activities as they give you something to actually shoot for. Scripting is a lot of fun!

I totally missed it/wasn't scripting yet last year. This year, I counted the days until it started. ...Thank you for a week and a half of SUPER GEEK FUN! This has been a fun contest...next year I'll enter advanced!

I end up getting a 90 for total score, I want the chance to redeem my self, please bring the games back next year. I had tons of fun doing it....

I just wish if there were more games, I had so much fun in last two weeks ... Thank you very much 'Scripting Guys'...you ROCK!!!

As I'm not that well-spoken in English I'll keep it short. Brilliant work guys. I really enjoyed the games, learned new techniques.

The events were challenging and forced me to stretch my skills, yet not too esoteric or difficult that I felt I had no chance. I look forward to next year.

As a person who did not have any type of CS education, I enjoyed to chance to work on a few 'graded' projects.

I want to tell you again that I (and my sons!) had a lot of fun and that I learned much about writing PowerShell scripts - so I will definitely come back again next year!

Answers to the Scripting Languages Trivia Test

1. A, **Larry Wall invented Perl**. Larry currently serves as the "Benevolent Dictator for Life" of the Perl project.

2. **True, the word Perl can be found in the Oxford English Dictionary**. And, sorry, VBScript and PowerShell fans: neither of those words appear in the OED.

3. C, **1987**, the same year Aretha Franklin became the first woman elected to the Rock and Roll Hall of Fame and the drug Prozac made its US debut. Coincidence? Probably.

4. A, **Project Thunder**. Snowball was the code name for Windows for Workgroups 3.11; Frosting the code name for Microsoft Plus! for Windows 95; and Touch-down the code name for Exchange Server 4.0.

5. B, **Performance Enhancing Relational Language**. Perl evolved from Larry Wall's interest in linguistics.

6. D, **Monads are Leibniz's term for the fundamental unit of existence that aggregates into compounds to implement a purpose**. According to the PowerShell team, "In this philosophy, everything is a composition of Monads. This captures what we want to achieve with composable management."

7. **False**. Visual Basic for Applications was released in 1993. VBScript was not released until 1995.

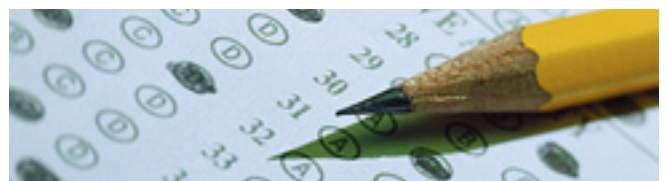
8. B, **Alan Cooper**. In 1994 Cooper was honored as one of the seven winners of a Windows Pioneer Award.

9. B, **Barcelona, Spain**. PowerShell was officially announced—and made available for download—as part of TechEd Europe's IT Forum.

10. C, **QuickBASIC**. Originally positioned as a shell construction kit accessible to anyone, the addition of QuickBASIC turned Project Thunder into a full-blown programming language aimed at developers.

11. B, **A replacement for the Windows command shell**. At one point, early in its development, PowerShell was seen primarily as a replacement for Cmd.exe.

12. D, **Osgood 2**. As far as we know, anyway.





5 DAYS



WINDOWS POWERSHELL TRAINING

"ALL THERE IS TO KNOW ABOUT WINDOWS POWERSHELL"

WHEN: MARCH 17TH-21ST

INSTRUCTOR: DON JONES

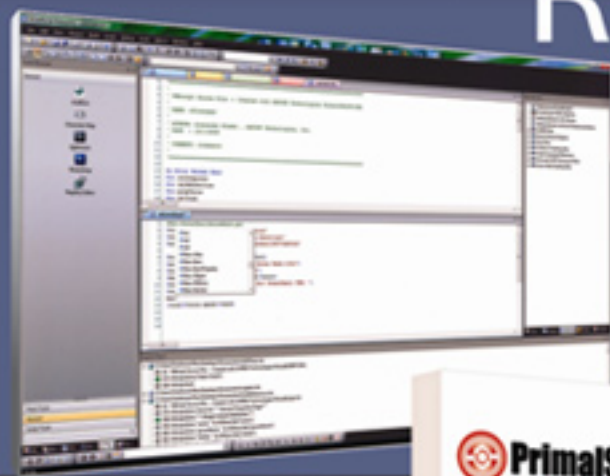
LOCATION: LAS VEGAS RENAISSANCE

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RESOURCES

to find your

SOLUTIONS



SAPIEN



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