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IT SKILLS IN A TOUGH JOB MARKET

*IT professionals know they must keep their skills up to date.
But doing so requires knowing what skills are in demand.*

The IT job market is no longer in a decline. The total number of available positions has increased almost 50% since April 2002, if Monster.com is a reasonable indicator. Only a year ago, the job market, according to popular sources, was much like the stock market in that it could not move up or down without running into itself. In a rising yet still weak job market, keeping an eye on the skills demanded is increasingly important.

This article identifies the most-sought IT job skills and examines the change in demand for these skills over a three-year period from April 2002 to April 2005. We used a systematic method to uncover the most important skills as demanded by employers (see “Data Collection for Most Demanded Job Skills”). IT professionals seeking re-employment and others fearing a change in their employment status may want to pay particular attention to these findings.

As shown in Figure 1, the need for Web-related development has changed the demand for programming skills. Web programming comprises a complex set of skills including both programming and scripting languages as well as meta-languages such as XML (more details are given in the sidebar). Not only has Web programming jumped into a commanding lead in the total number of jobs requiring programming skills, it is now mentioned in an impressive 42.6% of job ads. Figure 1 also shows that, con-

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DATA COLLECTION FOR THE MOST DEMANDED JOB SKILLS

The data in this article is based on job advertising on the Internet. This set of advertisements may be regarded as a sampling of the national IT labor market. The objectivity of a national sample and this type of market for IT persons is unparalleled, while many other types of samples have been frequently criticized as biased [1]. The advertisements represent information in the public domain, so they present valuable data that is not subject to the biases of interviewing, questionnaire surveys, or other methods of gathering opinions about the required job skills.

The data in this report was collected from the Monster.com job search Web site (www.monster.com), and verified against the Career Builder job search Web site (www.careerbuilder.com). Other popular job search Web sites were considered but rejected due to problems found in most Web sites in identification of the freshness of the ad, the inclusion of non-IT jobs, a narrow target audience, and the lack of granularity in the Boolean search descriptors of their search engines. Using Monster.com as the primary data source is justified since it is "by far the largest and most frequently cited of these sites" [4].

The IT jobs were selected by choosing the categories shown in Table 1 to represent the most appropriate set for IT of the 42 categories (from Accounting/Auditing to Transportation/Warehousing) provided by Monster.com. The technical skills used for searching the Monster.com site were selected from 39 technical skills identified in previous research by the authors, which is consistent with Rada's

estimate of the number of skills in an IT professional's portfolio [2, 3].

Table 2 shows the search queries used for each of the top skills identified on Monster.com. Table 3 shows the selected set of cities, as defined by Monster.com, used to provide national geographic definition for this study. These criteria were entered into the Monster search engine to define the retrieval for the respective

Table 3. Cities including metro vicinity used in the sampling.

Atlanta
Dallas
Chicago
Boston
New York
Denver
Seattle
San Francisco
Washington

job skill. The searches were conducted every month, specifying a time period of the preceding seven days to restrict the search to current advertisements. Thus, for each skill, the query yielded the current advertisements for that skill in a defined geographic region; these regions collectively represented a national sample. The total number of IT-related job advertisements for each geographic area was also noted to compute the aggregate number of advertisements and to assess the relative importance of each skill in the overall market. **C**

Skill	Query
Web Programming	Perl or "JavaScript" or "Java Script" or "ASP" or "HTML" or "DHTML" or "XML" or "VBScript" or "VB Script" or "CGI" or "JSP" or "JScript" or "PHP" or "Script" or "Cold Fusion" or "VB.Net"
Java	Java not "Script"
C/C++	"C++" or "C ++" or "C"
Unix	Unix
Windows	Windows NT or "NT" or "Windows 2000" or "Windows XP" or "XP"
Oracle	Oracle not "Financials" not "Designer"
SQL Programming	"SQL" not "SQL Server" not "SQL 7.0" not "SQL 2000"
SQL server	"SQL Server" or "SQL 7.0" or "SQL 2000"
Visual Basic	(VB or "Visual Basic") and not VBScript
.NET Development	.NET
ERP	SAP or "ERP" or "PeopleSoft" or "Baan" or "J. D. Edwards" or "JD Edwards" or "Oracle Financials"
Linux	Linux or "RedHat" or "Red Hat" or "Suse"
E-commerce Servers	Commerce Server or "Content Manager" or "WebLogic" or "Web Logic" or "WebSphere" or "Web Sphere" or "Oracle Application" or "iPlanet" or "Applogic"
Certification	Certificate or certified or MCSE or MCSA or MCDBA or MCP

Table 2. Query for skills search.

contrary to expectations, the popularity of Java has not yet outstripped the demand for C++ and C# programmers, but the trend is in that direction.

The demand for Java seemed to be relatively steady between 2002 and 2004, but Java is now demanded in more than one-fifth of all jobs, which shows that Java has become a mainstream programming language. Similarly, SQL programming, which was mentioned

as a skill in less than 15% of the jobs initially, is now demanded for more than one-fifth of the advertised jobs. While the demand for Visual Basic remained in single digits from 2002 until 2004, in 2005 it climbed into double digits at 11.4% of jobs. However, Visual Basic demand is not expected to experience more than slow growth in the future due to the growth in demand for .NET programming skills.

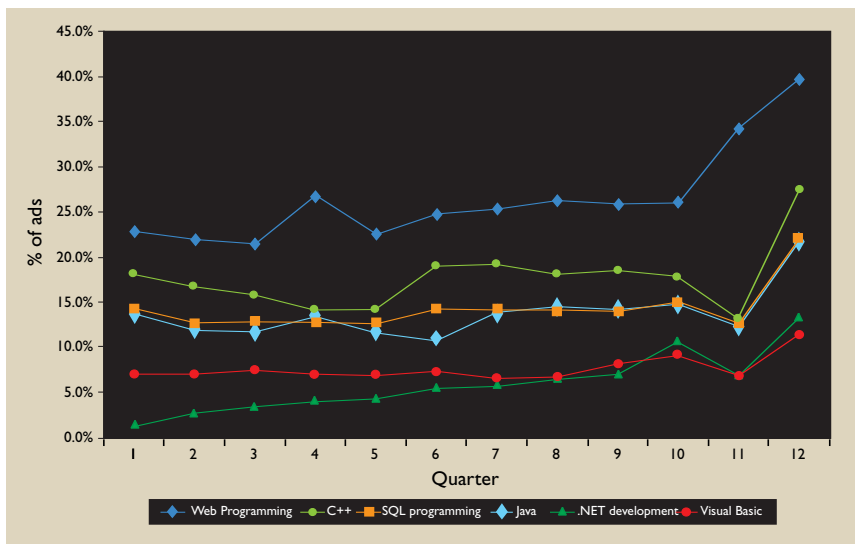


Figure 1. Programming skills.

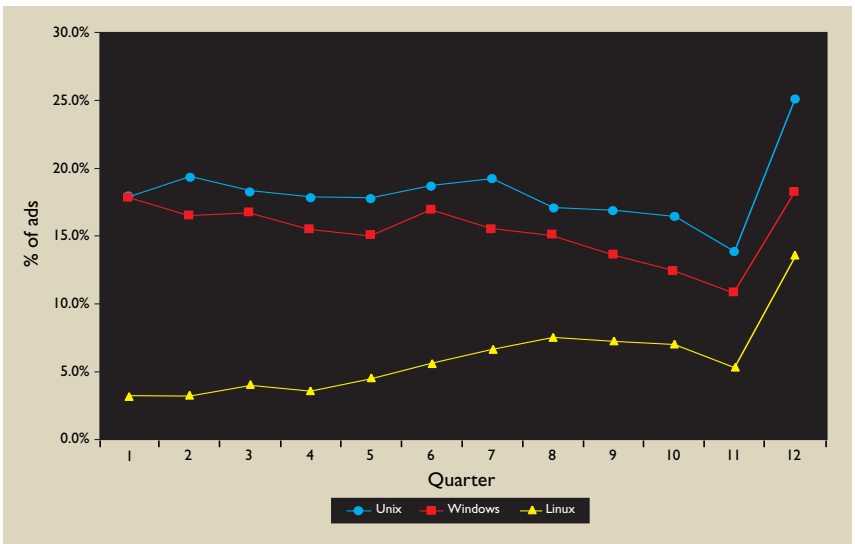


Figure 2. Operating system skills.

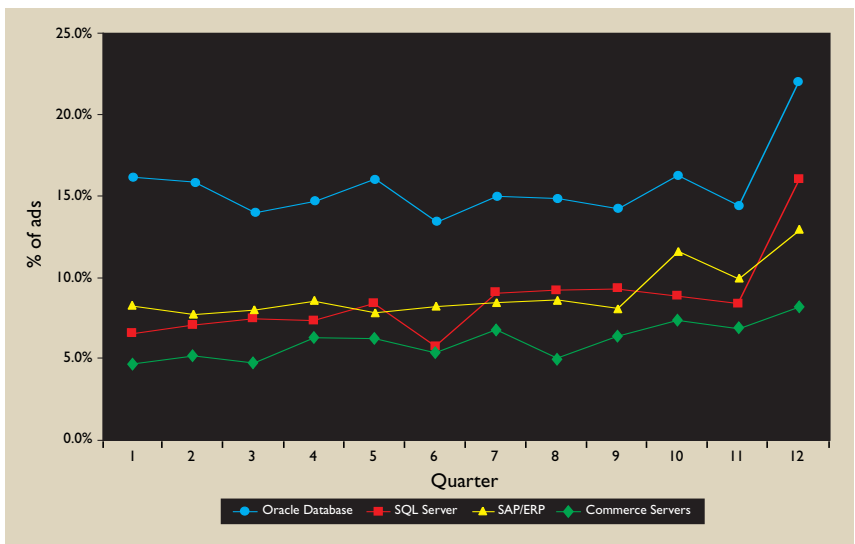


Figure 3. Database, ERP, and e-commerce servers.

.NET WINNING IN THE MARKETPLACE?

The percentage of jobs requiring .NET has grown more than 2-1/2-fold over the time period of the study. .NET skills now represent around 13% of the skills sought by IT employers. Although the growth in demand is to be expected because this is a new set of technologies, it is still impressive in a slow-growth job market. C++ and Java, however, remain strong and are experiencing the same growth in demand.

Operating systems. As illustrated in Figure 2, the demand for Unix and Windows skills seems to be holding steady, in contrast to Linux skills. The demand for Linux skills, although low in absolute terms, as the number of mentions in job advertisements was less than one-third of the number of mentions of Unix and Windows during 2005, seems to be increasing. Since Linux had been getting considerable attention as a viable enterprise-class operating system, it is interesting that, only two years ago, less than 5% of all advertised positions required Linux skills, whereas today, 13.6% note Linux skills. It is also worth mentioning that regardless of the operating environment, this skill is very important. If operating system skills are competing rather than complementary in advertised jobs, then over half of the 2005 job advertisements list skills in one of these three operating systems as necessary or desirable.

Database, ERP, and e-commerce server skills. The pattern of demand for database, ERP (such as SAP, Oracle, and PeopleSoft), and e-commerce server (such as WebLogic) skills is illustrated in Figure 3. Database skills are tightly coupled with these enterprise systems skills, at least in part because of the need to tune corporate databases to the requirements of the ERP and e-commerce server vendors.

Oracle is still the most demanded

Certification, which in most studies was found to be of only moderate importance to the certified person, **NOW APPEARS TO GIVE A CANDIDATE AN EDGE IN A TIGHT JOB MARKET.**


database skill, with over 22% of all positions requiring Oracle, and has maintained a commanding lead over other database skills. SQL server skills are growing in demand and represent the second most demanded database skill, being required in 16% of all IT jobs in 2005. (The demand for DB2 skills was less than 3% and is not shown in the figure) The demand for ERP skills has grown from less than 8% in 2002, 2003, and 2004 to slightly over 13% in 2005.

E-commerce servers. A growing but still small demand for technical skills related to the various commerce servers is illustrated in Figure 3. Although the total demand is still under 9%, it is expected to continue the pattern of growth along with the e-commerce market.

CERTIFICATION COUNTS

In addition to the data shown in the figures, it was found that an average of 5% of all positions advertised required vendor or industry certifications. There seems to have been a slight increase over the study period in the demand for certification as the overall job market improved. This may be an indication that employers rely on certification as a differentiator when the market is weak but improving. Certification, which in most studies was found to be of only moderate importance to the certified person, now appears to give a candidate an edge in a tight job market.

CONCLUSION

In an improving job market, it is increasingly important for IT professionals to be aware of the demand for specific skills. Professionals should also pay attention to the skills for which demand may be growing in order to better position themselves in the competitive job market. Web programming, Unix, C++, Java, SQL programming, and Oracle database seem to be the top six skills in the current job market. Each of these skills is demanded in at least 20% of advertised IT jobs. But don't plan your entire career based on these figures; rather, notice that some skills hang around for a long time, while others quickly mushroom. IT professionals can partially replicate the methodology presented here to keep abreast of changes in the demand for specific skills in their geographic area. 

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