

TECHNO-WIZARDS

2018-2019



E.G.S PILLAY ENGINEERING COLLEGE
(AUTONOMOUS)
NAGAPATTINAM

Department of Computer Science & Engineering



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MESSAGE



Chev.S.Paramesvaran

I deem it a great pleasure and privilege to congratulate the faculty members as they bring out their magazine. This magazine represents the newest channel to showing out the talents of our students.

We hope that this magazine will become the ultimate focus for your participation as we seek to strengthen and enhance our collaboration of knowledge.



Dr.S.Ramabalan

My Heartfelt congratulations for this new release of magazine. A milestone achievement indeed! There is no doubt in my mind that it will serve as a beacon to the future generations. I wish you success in all your endeavours.



Dr.M.Chinnadurai

I congratulate the members for releasing their magazine. This magazine is started with view to broadcast the various events for the student intelligence. Individually and collectively, this magazine is a measure of our success and foundation of our future. I wish you all the very best.

VISION

o To produce globally competent computer professionals capable of adaptive to the ever-changing technological trends of Industry and Society

MISSION

o To build the core competence desirable for a computer professional such as design, development, testing and maintenance of software systems to work in real world projects excelling the expected standards of Industries.

o To train the students to acquire high demand skills of emerging technologies to make them preferable for employers.

o To provide state-of-the-art learning facilities for effective implementation of learner centric teaching-learning process to develop professional skills, self-learning and lifelong learning capabilities.

PSOs

The graduates will have

PSO1: The ability to apply software engineering principles and practices to design and develop software systems that meet the automation needs of industrial and societal problems.

PSO2: The ability to demonstrate the technical skills and knowledge gained in the fields such as Artificial Intelligence, Data Science, Cloud Computing, Social Network Analysis & Mobile Application development to build successful career and pursue higher education.

PEOs

PEO1: Graduates will have successful careers in the field of computer science and engineering as computer professionals or entrepreneurs.

PEO2: Graduates will have desirable knowledge on core competencies and emerging technologies to pursue higher education and research.

PEO3: Graduates will continue to learn and adapt to the world of constantly evolving technology.

Graduates will be able to

PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.



New trending in 2018

1. AI permeation. Artificial intelligence (AI), largely manifesting through machine learning algorithms, isn't just getting better. It isn't just getting more funding. It's being incorporated into a more diverse range of applications. Rather than focusing on one goal, like mastering a game or communicating with humans, AI is starting to make an appearance in almost every new platform, app, or device, and that trend is only going to accelerate in 2018. We're not at techno-pocalypse levels (and AI may never be sophisticated enough for us to reach that point), but by the end of 2018, AI will become even more of a mainstay in all forms of technology.

2. Digital centralization. Over the past decade, we've seen the debut of many different types of devices, including smartphones, tablets, smart TVs, and dozens of other "**smart**" appliances. We've also come to rely on lots of individual apps in our daily lives, including those for navigation to even changing the temperature of our house. Consumers are craving centralization; a convenient way to manage everything from as few devices and central locations as possible. Smart speakers are a good step in the right direction, but 2018 may influence the rise of something even better.

3. 5G preparation. Though tech timelines rarely play out the way we think, it's possible that we could have a 5G network in place with 5G phones by the end of 2019. 5G internet has the potential to be almost 10 times faster than 4G, making it even better than most home internet services. Accordingly, it has the potential to revolutionize how consumers use internet and how developers think about apps and streaming content. 2018, then, is going to be a year of massive preparation for engineers, developers, and consumers, as they gear up for a new generation of internet.

4. Data overload. By now, every company in the world has realized the awesome power and commoditization of consumer data, and in 2018, data collection is going to become an even higher priority. With consumers talking to smart speakers throughout their day, and relying on digital devices for most of their daily tasks, companies will soon have access to and start using practically unlimited amounts of personal data. This has many implications, including reduced privacy, more personalized ads, and possibly more positive outcomes, such as better predictive algorithms in healthcare.

5. White collar automation. Is your job likely to be replaced by a machine? How certain are you of that answer? AI has been advancing enough to replace at least some white collar jobs for years; even back in 2013, we had algorithms that could write basic news articles, given sufficient inputs of data. Is 2018 going to be the year all humans are finally replaced by their new robot overlords? Almost certainly not, but I do think we'll see the fledgling beginnings of radical job transformations throughout the United States. I think it's naïve to think that jobs will be fully replaced, but they will be more heavily automated, and we'll have to adapt our careers accordingly.

6. Seamless conversation. A few years ago, voice search was decent, but unreliable. Today, voice search might as well be flawless; Microsoft's latest test gives its voice recognition software a 5.1 percent error rate, making it better at recognizing speech than human transcribers. Similarly, robotic speech and chatbots are growing more sophisticated. In 2018, with these improvement cycles continuing, I imagine we'll see the manifestation or solidification of seamless conversation. We'll be able to communicate with our devices, both ways, without any major hiccups or mistakes.

7. UI overhauls. I also think 2018 is going to be a major year for UI; we're going to have to rethink how we interact with our apps and devices. The onset of smart speakers and better voice search has made it so it's no longer necessary to look at a screen to input data.

Desktop devices are becoming less and less used as well, with mobile continuing to take over. New types of visuals and more audible clues will likely be included in next-generation UI, and consumers will adapt to them quickly, so long as they serve their core needs.

It's hard to say how fast these trends will manifest, or what types of devices and upgrades will dictate their development, but I'm confident we'll see increased exposure on all these fronts as 2018 develops.

Regardless of how you feel about technology, or your primary motivations for using it, I think we can all be excited about the new gadgets and infrastructure that await us next year.

Top 10 IT companies

Top 10 IT companies

Below are the top IT Companies in World 2018:

- 1st Place : Microsoft
- 2nd Place : IBM
- 3rd Place : Oracle
- 4th Place : Accenture
- 5th Place : HPE
- 6th Place : SAP
- 7th Place : TCS
- 8th Place : Capgemini
- 9th Place : Cognizant
- 10th Place : Infosys

Microsoft Corporation

Microsoft Corporation is headquartered in Redmond, Washington, and is one of the largest companies in the world.



The products like Microsoft Windows, Microsoft Office, and Internet Explorer etc is being used by almost by almost every professional in the world. Microsoft was founded by Bill Gates and Paul Allen on 4, April, 1975, and it has expanded its market share by diversifying its services from operating system market to other various software products. It also took advantage of inorganic growth i.e. improve its revenue by acquiring no. of companies. Lastly Microsoft has acquired LinkedIn which is considered to be largest acquisition for 26.2 billion dollars in 2016 and also it has acquired skype technologies for 8.5 billion dollars in the year 2011. There is a new paradigm shift in technology with the rapidly evolving environment and Microsoft is trying to lead this new era as a front runner. Looking forward Microsoft is focussing on new innovative technologies like Machine Learning, AI and cloud computing to drive new growth that can help them building their own digital capability and provide robust solutions for various users.

There is a huge surge in the growth rate of gaming industry and Microsoft is investing huge amount in \$100 billion Gaming industry. They have around half million live member network of XBOX users. They want Microsoft to be the company of gamers to play the games they want, on the device they want and with the people they want. Microsoft Corporation strategically prioritizing their investments to capture the expanding markets opportunities. They are expanding their existing datacentres and they are bringing Azure to various regions globally more than any other cloud services provider and with the best compliance coverage in the IT industry. Microsoft is on 1st Rank in Top IT companies in the world 2018.

IBM

International Business Machine (IBM) is an American MNC and is operational in more than 150 countries.

IBM believes in high R&D investment due to which company holds the record for most patents generated by business. IBM has the highest workforce and company is known for its employee friendly schemes like the company was among the first corporations to provide group life insurance. IBM is one of the world's largest employer with nearly around 380,000

employees. Looking ahead, IBM is positioning uniquely to help clients and users to use AI and data analytics to build smarter businesses. Over the past years IBM invested aggressively in technology and its people but senior leadership also considering IBM to position in key high value segments of the IT industry like AI, blockchain, cloud computing and information security. IBM is on 2nd Rank in Top IT companies in the world 2018.

Revenue: \$ 79.14 billion
Profit: 45.8% of its Revenue



IBM's revenue is growing at a double digit rate. During 2017 they successfully strengthened their position as a leading enterprise for providing cloud services and block chain leader for the business.

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Oracle

Oracle corporation headquarter is located in Redwood Shores California and it is one of the renowned American MNC.

Oracle has second highest revenue in software industry after Microsoft with an employee base of around 1,35,000. The company is widely known for its ERP solutions, database development and management, supply chain management software and Customer relationship management software.

Oracle has a wide customer base having more than 400,000 customers across the globe and has their presence across wide variety of industries in more than 150 countries.

. Oracle is known for its user friendly applications and always try to eliminate the complexities from the applications they build like applications ranging from data centre operations to cloud applications which can be road block for business innovation, speed, flexibility, manageability, reliability, security and engineering.

It enable its customers by providing smart solutions which add value to their business as well as their users and customers. Oracle has more than 16,000 patents worldwide. The company is focussing majorly on building intelligent cloud applications, integrated cloud platform, open source platform for developers, ERP solutions and analytical tools which use machine learning algorithms to generate results. Oracle is also developing its capabilities in AI, machine learning, IOT, blockchain, human interface technologies all of which aimed to enhance customer capabilities so that they can develop their own innovative products and services. Oracle investment is huge in Research and development activities and it was \$6.5 billion dollars in the year 2017. Oracle is on 3rd Rank in Top IT companies in the world 2018.

Revenue: \$37.73 Billion

Profit: 24.8% of its revenue

Accenture

Accenture has been listed in fortune global 500 companies and is one of the largest IT companies.

It is a global management consultancy firm which provides professional services like strategy, consulting, technology and operations services. Accenture started as the business and tech consulting firm of accounting firm which was named as Arthur Andersen. In the year 1989, it separated and Andersen consulting adopted its current name Accenture which means accent of the future. The company has a head count of more than 400,000 employees worldwide. Accenture has various business units and all business units have unique contribution in Accenture's overall revenue generation. Accenture consulting

provides mobility services and digital marketing analytics. Accenture technology focusses on research and development, technology solution implementation, technology labs for emerging technologies. Accenture strategy provides technology strategy services, business strategy and operation strategy services.

Investments by Accenture in the future

Digital: Accenture has been recognised as largest provider of digital marketing services.

Cloud: Accenture is helping various companies to migrate to the cloud to realize the benefit of increased agility at lower speed.

Security: For various clients they are providing enhanced capabilities for advanced security and increased productivity. In 2017 their investment has almost been double in acquisition to become more relevant and grow continuously through inorganic and strategic acquisition. Accenture is on 4th Rank in Top IT companies in the world 2018.

Revenue: \$34.90 Billion
Profit: 13.3% of its revenue

Hewlett Packard Enterprise

Hewlett Packard Enterprise is one of the leading technology firm that enable its customers to remain robust and upfront to changing environment.



HP is an American multinational company headquartered in California and has its research arm known as HP Labs. It was founded in 1966 aims to deliver new technologies and to create opportunities which helps HP to maintain its market share in the current dynamic scenario. HP has a most comprehensive product portfolio and provide its customers cloud solutions, data centre, workplace applications. They develop technology and services which help its customers to be more IT proficient, more productive and secure across the globe. It is specialized in developing and designing software, data storage, cloud computing.

There are several product lines and services which forms the major part of their total revenue such as personal and official computing or printing devices, networking devices like large servers, storage devices, software and it also has several range of hardware products like printers etc. HP spends large amount of its earning in marketing its products to several enterprises, households, supply chain retailers, software partners, major

technology vendors, SME's through offline or via online medium. HP Software also provides software solutions like SAAS software as a service, cloud computing services, including education, consulting, support etc. HPE is on 5th Rank in Top IT companies in the world 2018.

Revenue: \$12.8 billion
Profit: 1.38% of its revenue

SAP

Accenture has been listed in fortune global 500 companies and is one of the largest IT companies.



It has an employee strength of more than 88,000 employees in more than 130+ countries and based on market capitalization, SAP is world's third largest software manufacturer. SAP has more than 380,000 customers in over 170+ countries. SAP has strong history of technology innovation and it has always focussed on innovating new technology due to which it has developed 100+ innovation and development centre across the world. SAP is leveraging technologies like machine learning, Internet of things, blockchain, cloud and SAP HANA to solve various business problems across all industries and regions.

SAP HANA allows companies to integrate processes end to end and help them in enhance their business models in the way they actually want to create enormous amounts of value for its customers. For supply chain and logistics management, SAP was the first company to build ERP solutions and it always focussed on extending the business processes beyond the customer expectations. Through business collaboration and networking they are able to achieve massive scale and high market share. The company is thinking of migrating their 90% of SAP customers to their new platform by 2025.

They want to eliminate paper-based processes and redundancy. They also aim to get a billion users of our cloud solutions and also they want half a million businesses of all sizes running SAP software so that they can defeat complexity and able to simplify their businesses. SAP is on 6th Rank in Top IT companies in the world 2018.

Revenue: \$28.86 Billion

Profit: 28.9% of its Revenue

Tata Consultancy Services (TCS)

Tata Consultancy Services (TCS) has been ranked as no. 1 Indian Multinational IT firm which generate its revenue from various domains.



TCS has many functional domains like consulting, software development, infrastructure support and business process outsourcing and its headquarter is located in Mumbai, India. It comes under the world's top 10 largest IT services provider by revenue. As of 2017, it has also been ranked 10th in the Fortune India 500 list. It has various clients of different sectors like Banking and Financials, Consumer Goods and Distribution, Communication, Media & Technology, Energy- Resources and Utilities, Insurance, manufacturing, Life Sciences & Healthcare, Retail, Public services etc. It has surpassed Reliance industries by achieving Rs. 6.19 trillion market capitalization and has become the most valued firm of India.

TCS is expanding its technology portfolio and is working on latest technologies like Artificial Intelligence, Machine learning, Internet of things, Cloud Computing and Cyber Security. TCS is on 7th Rank in Top IT companies in the world 2018.

Revenue: \$17.57 Billion

Profit: 22.3 % of its revenue

Capgemini

Capgemini is one of the leading IT companies in the world having a strong global presence.



The French company Capgemini, based out of Paris, has its global operations spread across more than 40 countries. The brand is a leader in IT services providing consulting, professional services, outsourcing etc, which is driven by more than 190000+ employee globally. Over the last few year, Capgemini is consolidated its position as a leading IT company by acquiring several other players in the industry. To name a few, the company has acquired iGate, Fahrenheit 212, LiquidHub-US etc in the last couple to years. All these acquisitions have helped the company have more business in IT, technology and strategy domains. Green IT is another business initiative of Capgemini which has put the company in the elite company of the top IT companies in the world.

The company was formed in 1967 by Serge Kampf and has since then become one of the pioneers in the industry. In India, itself the company has over 100000 employees. With a consistent performance year after year the company has also been recognized by several awards from the likes of Gartner, Forrester, Backbase etc.

Cognizant

Cognizant is one of the leading IT services companies which is helping clients' to transform their existing business, operating and technology models with the rapidly changing digital technology.



Cognizant is consistently able to maintain its ranking among the most admired and fastest growing companies in the world. Cognizant unique industry based consulting approach actually helping client to build more innovative and efficient businesses. It has its headquarter located in U.S. Cognizant is also the member of the Nasdaq and it is ranked 205 on the Fortune 500 ranking. The revenue of Cognizant is consistently growing and it has increased from \$7.7 Billion to \$13.5 billion currently. It has an employee strength of around 260,000 workforce by 2016. Cognizant is investing aggressively in digital services to enhance value for stakeholders or shareholders through high return of capital. Cognizant is helping banks revolutionize lending by assessing risk using predictive analytics by analysing customer's financial history. Using advanced analytics tools, they analyse rich borrower data which helps banks to better predict a customer's creditworthiness and take various informed decisions to lend money to those who have lower credit risk.

It also help qualified individuals and businesses to get the desired financing. Cognizant is on 9th Rank in Top IT companies in the world 2018.

Revenue: \$ 14.81 Billion

Profit: 10.2% of its Revenue

Infosys

Infosys is an Indian MNC that provides IT solution to its client through business process consulting, software development and business process outsourcing services.

Infosys had around 200000 employees by the end of March 2017 & its headquarter is located in Bengaluru, Karnataka, India. The company is also known for its high gender diversity as it has around 36% of women workforce all across the world.

Infosys is the second largest Indian IT company by 2017 revenues and is ranked under top 10 IT company of the world in terms of revenue. On June 2017, its market capitalisation was around \$34 billion. During financial year 2017, Infosys had a 4% hiring rate and received around 1,290,000 applications from prospective employees who were interested in building their career with Infosys. Its workforce consists of employees from more than 100 different nations.



Out of its total workforce, more than 75% are software professionals, 15-20% are working in its Business process mapping arm and remaining are engaged for technical support and sales projects. It was the India's first IT company which was able to cross annual revenue of US\$100 million in the year 2000, US\$1 billion in 2004 and US\$10.21 billion in 2017. Quarter 3 of 2017 financial year, Infosys were able to achieve high growth rate with net profit increased to 38.3%. Hence Infosys is on 10th Rank in Top 10 IT companies in the world.

Revenue: US \$10.21 Billion

Profit: 21.9% of its revenue

Top 10 software companies

Microsoft (MSFT): The world leader in software companies, Microsoft continues to maintain its dominance with total revenues of \$77.85 billion in 2013. Of this, \$65.7 billion, or 84 percent, was from its software stream. Microsoft's software revenues exceed those of its next two competitors combined.

Oracle (ORCL): Oracle surpassed IBM in 2013 to gain the number two spot in software revenues. Its software revenues were \$29.7 billion in 2013, out of a total revenue of \$34.74 billion.

International Business Machines (IBM): The large conglomerate offers a wide range of products and services, including both hardware and software. It consistently derives 25 to 30 percent of revenue from software. Of the total revenue of \$99.75 billion for 2013, software contributed \$29.1 billion.

SAP (SAP): The Germany - based multinational software giant generated \$18.9 billion in revenue from its software stream, out of the total revenue of \$22.87 billion. Software represents 83 percent of its business. (SAP's official report gives revenues in euros. For this article, we converted euros to U.S. dollars using the December 31, 2013 exchange rate of 1.36.)

Symantec (SYMC): Nasdaq - listed Symantec, the global leader in software security solutions, generated \$6.4 billion in software revenue from total revenues of \$6.9 billion.

EMC (EMC): NYSE - listed EMC takes the number six spot with \$5.6 billion of software revenues out of total revenues of \$23.2 billion. (EMC also owns the software company VMWare which is number eight on this list. The companies are listed as separate entities on the New York Stock Exchange. For that reason, this list treats EMC and VMWare as two separate entities.)

3Hewlett-Packard (HPQ): The global giant is mainly known for printing products and solutions. From its total revenue of \$112.298 billion, it derived just \$4.9 billion from software. Although this is a small percentage of Hewlett Packard's total revenues, it still makes the company the seventh largest software company.

VMWare (VMW): VMWare, owned by EMC, remains separately listed on the New York Stock Exchange. Its software stream revenues for 2013 were \$4.8 billion, out of total revenues of \$ 5.2 million. If the software revenues of EMC and VMWare considered together, the company would be the fifth largest software company in the world.

CA Technologies (CA): Nasdaq - listed CA Technologies has \$4.2 billion from its software stream, out of total revenues of \$4.643 billion.

Salesforce.com (CRM): Ironically, the NYSE - listed salesforce.com promotes itself with the motto, "No Software." The company sells software through the software - as -a- service model. In 2013, it saw \$3.8 billion in revenues from software, out of total revenues of \$4.07 billion.

Wipro:

Neemuchwala was appointed group president and COO in April 2015. As the COO, Neemuchwala spearheaded several initiatives that helped create a more nimble and agile organization, and accelerated Wipro's ability to not only respond to customers in the digital age, but also ensure deeper employee engagement. On 1 February 2016 he was appointed CEO and executive director of Wipro succeeding T.K. Kurien. As CEO, Neemuchwala oversees \$8 billion in revenue and more than 160,000 employees serving clients across six continents. In September 2018, Neemuchwala helped land Wipro its largest deal in history with a \$1.5 billion, 10-year contract with Alight Solutions. He is on the board of directors of Wipro Limited and the World Affairs Council of Dallas Ft. Worth. He also serves on the CEO Council of the Texas Economic Development Corporation.

CEO of INDIAN companies

Adani Group Sudipta	Bhattacharya
Aditya Birla Group	Dr.Santrupt Misra
Air India	Ashwani Lohani
Allahabad Bank	Usha Ananthasubramanian
Amazon.com	Jeff Bezos
Ambuja Cements	Ajay Kapur
Amul	R.S. Sodhi
Andhra Bank	J Packirisamy
Apollo Hospitals	Prathap C Reddy
Apple Inc.	Tim Cook
Ashok Leyland	Vinod K. Dasari
Asian Paints	K.B.S. Anand
Axis Bank Ltd.	Amitabh Chaudhry
Bajaj Auto	Rajiv Bajaj
Bank of Baroda	P. S. Jayakumar
Bank of India	Dinabandhu Mohapatra
Bharat Heavy Electricals Ltd(BHEL)	Atul Sobti
Bharat Petroleum	D. Rajkumar
Bharat Sanchar Nigam Ltd (BSNL)	Shri Anupam Shrivastava
Bharti Enterprises	Sunil Bharti Mittal
Bombay Dyeing	Nusli Wadia
Canara Bank	Rakesh Kumar sharma
CIPLA	Umang Vohra
Dena Bank	Shri Karnam Sekar
DLF	T.C.Goyal
Federal Bank	Shyam Srinivasan
Flipkart	Sachin Bansal
GAIL	B.C. Tripathi
HCL	Technologies C Vijayakumar
HDFC Bank	Aditya Puri
Hero Motocorp	Pawan Munjal
ICICI Bank	Sandeep Bakhshi
IDBI Bank	B Sriram
Vodafone Idea Ltd.	Balesh Sharma
Indian Overseas Bank	R. Subramaniakumar
Infosys Technologies	Salil Parekh
Jet Airways	Vinay Dube
Jindal Steel	Mr. Naushad Akhter Ansari
Karbons Mobiles	Pradeep Jain
Kingfisher Airlines	Sanjay Aggarwal
Kotak Mahindra Bank	Uday Kotak
Larsen & Toubro	Subrahmanyam
Mahanagar Telephone Nigam Ltd	Pravin Kumar Purwar
Mahindra & Mahindra	Anand Mahindra
Maruti Suzuki	Kenichi Ayukawa
Micromax Mobile	Rahul Sharma
NDTV	Suparna Singh
Oil and Natural Gas Corporation	Shashi Shanker
Punjab National Bank	Sunil Mehta
Reliance Industries	Mukesh Ambani
Royal Enfield	Siddhartha Lal
Snapdeal	Kunal Bahl
South Indian Bank	V. G. Mathew

Personal Life

Neemuchwala gets his surname from Neemuch, a small town in Madhya Pradesh. He grew up in Delhi, Neemuch, and Mumbai. He enjoys travelling, Indian music, reading fiction, and playing golf. He is married, has three children, and lives in Dallas, Texas.

BEST PROJECT IN 2018

Arduino playing piano tiles:

OBJECTIVE: To build a Robot that plays Piano Tiles, using LDR and Relay with Arduino UNO.

Yes, this circuit plays piano tiles on its own! Better than any human on earth. Sensors(LDR) attached to the screen senses the black tiles during gameplay and sends this info to the analog pin of Arduino in terms of Analog voltage. Arduino then activates the corresponding Relay, so that the coin connected in series with relay's switch can hit the tile to score!

Components you need for this project are:

- 1) Arduino Board
- 2) LDR(Light dependent resistors) X 4
- 3) Connecting Wires
- 4) SPDT Relay X 4
- 5) Coins X 4
- 6) Breadboard

Puzzle



SOIL SAMPLES

For Crossword Puzzle Day 2018 we've provided a more challenging puzzle for our avid GAMES fans. In this puzzle, YOU get to create the diagram! The hint that was given with the originally printed version is: The answer to 1-Across starts in the second box of the first row. (You can ignore the part in the instructions that mentions looking on page 58) Have fun solving!

Holiday Algebra



A puzzle is a game, problem, or toy that tests a person's ingenuity or knowledge. In a puzzle, the solver is expected to put pieces together in a logical way, in order to arrive at the correct or fun solution of the puzzle. There are different genres of puzzles, such as crossword puzzles, word-search puzzles, number puzzles, relational puzzles, or logic puzzles.

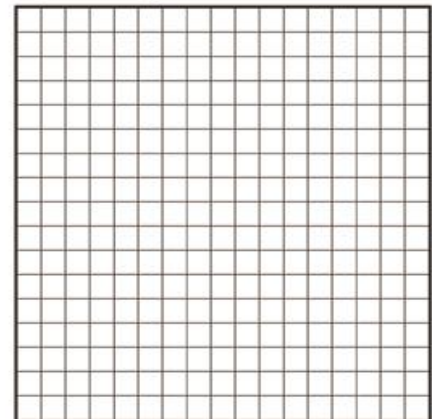
Puzzles are often created to be a form of entertainment but they can also arise from serious mathematical or logistical problems. In such cases, their solution may a significant contribution to mathematical research.

SOIL SAMPLES

This diagramless crossword is 17 squares wide by 17 squares deep and has regular crossword symmetry. As a hint, the location of the first square of 1-Across's answer is given at the bottom of page 58.

ACROSS

- 1 Crusading journalist Jacob
- 5 Long March leader
- 6 Sound of disapproval
- 11 Cosby's 1 Soy co-star
- 12 Surface at Roland Garros Stadium: 2 wds.
- 15 Move slightly
- 16 Not well
- 17 Far East nursemaid
- 18 Cats director Nunn
- 19 Sound from a puppy
- 21 It's counterpart
- 22 "Honest" prez
- 23 ___ pro nobis
- 24 Female elephant
- 26 Street gang's power struggle: 2 wds.
- 29 Veggie tray accompaniment
- 31 Concerning the main aerial trunk
- 32 Flavor enhancer, briefly
- 35 Sound of disapproval
- 37 Chair part
- 38 Hammer's target
- 41 1992 book subtitled "Ecology and the Human Spirit": 4 wds.
- 46 ___ vera
- 47 Certain MT grade
- 48 Sign outside a B-way hit
- 49 Umpire's call
- 50 Brings together
- 53 Show ___
- 55 Double sea urchin: 2 wds.
- 60 Et ___ (and the following)
- 62 Like 3 or 47
- 63 Snaky curve
- 64 Agent, for short
- 65 With at ___ respect
- 67 Quagmire
- 69 Radio host Don
- 71 ___ Maria
- 73 Main impact
- 74 Vacuum cleaner brand: 2 wds.
- 77 Like a monkey
- 78 Really weird
- 79 Female sandpiper
- 80 Knitter's need



DOWN

- 1 Pre-election event
- 2 Type of type
- 3 Really cold
- 4 Cut-dip ___
- 5 Geological formation: 2 wds.
- 6 Author of 41-Across: 2 wds.
- 7 Performances at the Met
- 8 Early third-century date
- 9 Mauna ___
- 10 12 Angry Men director Sidney
- 11 Pool player's need
- 13 Prego competitor
- 14 Norse thunder god
- 15 Royals star George
- 18 Ski lift type: Hyph
- 20 Piece of citrus
- 22 Destructive weapons: Hyph.
- 25 Accompanied by
- 27 Price of a cab ride
- 28 Singer Turner
- 29 Penultimate Greek letter
- 32 "Give ___ break": 2 wds.
- 33 Actor Mineo
- 34 Guideline from the get-go: 2 wds.
- 36 Prepares to pray
- 37 Sounds of satisfaction
- 39 Hoop area
- 40 Permit
- 42 Watch over
- 43 Course of study for those instructing new arrivals in the U.S.
- 44 Wall Street trader, for short
- 45 H Flagston's wife
- 51 What "L.A." stands for: 2 wds.
- 52 Threw carelessly
- 54 First letter, to a Brit
- 55 Gloomy
- 56 Silent movie actress Randle
- 57 Dry as a bone
- 58 Notes between do and fa: 2 wds.
- 59 San Antonio cagers
- 61 Tumble
- 66 French mineral water brand
- 68 Whichever
- 70 Disco ___ (The Simpsons character)
- 72 Building extension
- 75 Like Chablis
- 76 Notable period

Aptitude

An aptitude is a component of a competence to do a certain kind of work at a certain level. Outstanding aptitude can be considered "**talent**". An aptitude may be physical or mental. Aptitude is inborn potential to do certain kinds of work whether developed or undeveloped. Ability is developed knowledge, understanding, learned or acquired abilities (skills) or attitude. The innate nature of aptitude is in contrast to skills and achievement, which represent knowledge or ability that is gained through learning. According to Gladwell (2008) and Colvin (2008) often it is difficult to set apart an outstanding performance due merely to talent or stemming from hard training. Talented people as a rule show high results immediately in few kinds of activity, but often only in a single direction or genre.

Intelligence and aptitude

Aptitude and intelligence quotient are related, and in some ways differing views of human mental ability. Unlike the original idea of IQ, aptitude often refers to one of the many different characteristics which can be independent of each other, such as aptitude for military flight, air traffic control, or computer programming. This approach measures a variety of separate skills, similar to the theory of multiple intelligences and Cattell–Horn–Carroll theory and many other modern theories of intelligence. In general, aptitude tests are more likely to be designed and used for career and employment decisions, and intelligence tests are more likely to be used for educational and research purposes. However, there is a great deal of overlap between them, and they often measure the same kinds of abilities. For example, aptitude tests such as the Armed Services Vocational Aptitude Battery measure enough aptitudes that they could also serve as a measure of general intelligence.

A single construct such as mental ability is measured with multiple tests. Often, a person's group of test scores will be highly correlated with each other, which makes a single measure useful in many cases. For example, the U.S. Department of Labor's General Learning Ability is determined by combining Verbal, Numerical and Spatial aptitude scores. However, many individuals have skills that are a lot higher or lower than their overall mental ability level. Aptitude subtests are used intra-individually to determine which tasks that individual is more skilled at performing. This information can be useful for determining which job roles are the best fits for employees or applicants. Often, before more rigorous aptitude tests are used, individuals are screened for a basic level of aptitude through a previously-completed process, such as SAT scores, GRE scores, GATE scores, degrees, or other certifications.

Combined aptitude and knowledge tests:

Tests that assess learned skills or knowledge are frequently called achievement tests. However, certain tests can assess both types of constructs. An example that leans both ways is the Armed Services Vocational Aptitude Battery (ASVAB), which is given to recruits entering the armed forces of the United States. Another is the SAT, which is designed as a test of aptitude for college in the United States, but has achievement elements. For example, it tests mathematical reasoning, which depends both on innate mathematical ability and education received in mathematics.

Aptitude tests can typically be grouped according to the type of cognitive ability they measure:

1. Fluid intelligence: The ability to think and reason abstractly, effectively solve problems and think strategically. It's more commonly known as 'street smarts' or the ability to 'quickly think on your feet'. An example of what employers can learn from your fluid intelligence is your suitability for the role for which you are applying

2. Crystallised intelligence: The ability to learn from past experiences and to apply this learning to work related situations. Work situations that require crystallised intelligence include producing and analysing written reports, comprehending work instructions, using numbers as a tool to make effective decisions, etc.

Aptitude Tests :

What is an Aptitude Test?

An aptitude test is a systematic means of testing a job candidate's abilities to perform specific tasks and react to a range of different situations. The tests each have a standardised method of administration and scoring, with the results quantified and compared with all other test takers. No prior knowledge is assumed, as the tests seek to determine innate ability at a particular competency.

How are Aptitude Tests Administered?

Aptitude tests are increasingly administered online - most often after a candidate has made their initial job application - and are used to filter unsuitable applicants out of the selection process, without the need for time-consuming one-to-one job interviews.

Employers use aptitude tests from a variety of providers - such as SHL, Talent Q and Cubiks - alongside general interview advice, application forms, assessment centres, academic results and other selection methods. No test is perfect, but all aim to give an indication of how candidates will respond to the challenges they will face in their day-to-day role at a firm.

The tests can be taken online or at a testing centre, such as a firm's offices, where they are usually paper-based. Often a firm may ask you to complete both types of test, to confirm you did not cheat during the initial unsupervised online test.

Who are the Different Test Providers?

There are numerous organisations that produce aptitude tests, including:

- SHL. An international company operating in over 50 countries, providing tests in over 30 languages.
- Kenexa. An IBM company providing recruitment services to organisations in a variety of industries.
- Cubiks. An international HR consultancy that provides psychometric tests and runs assessment centres for employers.
- Talent Q. An organisation owned by Hay Group, which provides assessments whereby a single test can be used to measure a number of different aptitudes.
- Saville. A provider of aptitude packages that test powers of analysis, comprehension and technical ability.

What are the Different Types of Aptitude Test?

These are the most common types of aptitude test that you will encounter:

- Numerical reasoning tests. These tests require you to answer questions based on statistics, figures and charts.
- Verbal reasoning tests. A means of assessing your verbal logic and capacity to quickly digest information from passages of text.
- In-tray exercises. A business-related scenario that assesses how well you can prioritise tasks.
- Diagrammatic tests. Tests that measure your logical reasoning, usually under strict time conditions.
- Situational judgement tests. Psychological tests that assess your judgement in resolving work-based problems.
- Inductive reasoning tests. Tests that identify how well a candidate can see the underlying logic in patterns, rather than words or numbers.
- Cognitive ability tests. A measurement of general intelligence, covering many categories of aptitude test.
- Mechanical reasoning tests. These assess your ability to apply mechanical or engineering principles to problems; they are often used for technical roles.
- Watson Glaser tests. Designed to assess a candidate's ability to critically consider arguments; often used by law firms.
- Abstract reasoning tests. Another name for inductive reasoning tests.
- Spatial awareness tests. These tests assess your capacity to mentally manipulate images, and are often used in applications for jobs in design, engineering and architecture.
- Error checking tests. An unusual type of aptitude test that focuses on your ability to identify errors in complex data sets.

The numerical test consists of 10 questions to be answered in 10 minutes, while the diagrammatic and verbal tests consist of 5/10 questions to be answered in 5 minutes (although there is no timer on the test itself). Our tests are slightly harder than the real thing, in order to make them sufficiently challenging practice. Don't forget to first check out the test tips and techniques mentioned further down this page.

You can take the tests as many times as you like. Click the 'Take test' link below on either to get started.

WikiJob also has a psychometric tests app, available for both Apple and Android, which includes 10 numerical tests and 8 verbal tests. The tests include a timer and worked solutions at the end.

Numerical Practice Test :

Try this numerical practice test similar to SHL, PSL and the GTIOS psychometric tests used by many companies as part of their application process.

Questions	10
Pass Percentage	70%
Time Limit	10 min

Verbal Reasoning Practice Test :

Verbal reasoning tests are used by interviewers to find out how well a candidate can assess verbal logic. SHL is perhaps the most well known producer of verbal reasoning tests, and the most widely used.

Questions	10
Pass Percentage	70%
Time Limit	5 min

Diagrammatic Reasoning Test :

Diagrammatic reasoning tests assess your capacity for logical reasoning, using flowcharts and diagrams. Try these five practice questions, designed to be similar to those used by major graduate employers.

Questions	5
Pass Percentage	80%
Time Limit	5 min

Test Structure for Aptitude Tests :

Tests are timed and are typically multiple choice. It is not uncommon for some available answers to be deliberately misleading, so you must take care as you work through. Some tests escalate in difficulty as they progress. Typically these tests are not designed to be finished by candidates.

Scores and Marking :

Your score relates your performance to an average group. Your aptitude, ability or intelligence has a relative value to this average result. Typically, an 'average' performance all that is required to pass an aptitude test. Most employers take people's backgrounds into consideration for marking. For example, maths graduates will have an unfair advantage over arts graduates on a numerical test. Consequently, most employers use these tests as only part of the assessment process.

Test Structure for Aptitude Tests :

Many aptitude tests incorporate negative marking. This means that for every answer you give incorrectly, a mark will be deducted from your total (than scoring no mark). If this is the case, you will normally be told beforehand. In any test that does incorporate negative marking, you must not guess answers, even if you are under extreme time pressure, as you will undo your chances of passing.

What exactly is an aptitude test and how should you approach one? Find out more in this short video.

Aptitude Tests: Preparation and Practice :

Evidence suggests that some practice of similar aptitude tests may improve your performance in the real tests. Practice exam technique and try to become more familiar with the types of test you may face by completing practice questions. Even basic word and number puzzles may help you become used to the comprehension and arithmetic aspects of some tests. WikiJob recommends practising aptitude tests prior to the real assessment. JobTestPrep offers a wide range of professionally constructed psychometric questions, written in the same style as PSL and SHL tests (the tests most graduate employers use to assess candidates). The questions are structured in a professional format, just like the real thing. Aptitude tests can also be practised with similar providers such as Monkey and AssessmentDay.

Preparation Before the Test :

Treat aptitude tests like an interview: get a good night's sleep, plan your journey to the test site, and arrive on time and appropriately dressed. Listen to the instructions you are given and follow them precisely.

Before the actual aptitude test itself, you will almost certainly be given practice examples to try. Make sure you ask questions if anything is unclear at this stage. You will normally be given some paper on which to make rough workings. Often you can be asked to hand these in with the test, but typically they do not form part of the assessment.

Taking the Test :

You should work quickly and accurately through the test. Don't get stuck on any particular question: should you have any problems, return to it at the end of the test. You should divide your time per question as accurately as you can - typically this will be between 50 and 90 seconds per question. Remember that the tests are difficult and often you will not be expected to answer all the questions. Be particularly cautious if the aptitude test uses negative marking; if this is not the case, answer as many questions as possible in the time given. Remember that multiple-choice options are often designed to mislead you, with incorrect choices including common mistakes that candidates make.

Taking the Test :

You may also like to read:

- How to prepare for SHL tests. A general primer.
- What is a psychometric test?. All the info you'll need on psychometric testing.
- What is the UKCAT?. Who will need to take the UKCAT test and how it's structured.
- What is an In-Tray test?. How to approach this type of exercise, and tips for success.
- What are your weaknesses?. How to gauge where your weaknesses lie.

Taking the Test :

Computer science is a branch of engineering that deals with the scientific study of computers and their usage like computation, data processing, systems control, advanced algorithmic properties, and artificial intelligence. The study of computer science includes programming, design, analysis and theory. Computer science engineering projects involve designing and development of various application-based software. Computer science project topics can be implemented by a number of tools such as Java, .NET, Oracle, etc. The list of computer science project ideas is as follows.

Tips For Success :



These five tips are well worth remembering before you take an aptitude test for real:

- Treat the test like you would any other exam.
- Work swiftly and accurately through any test.
- Work out the maximum time you can spend on any question and stick to it religiously. You can return to questions at the end. Never get stuck on any particular question, even if you think you nearly have it.
- If you are going to an assessment centre, take a calculator you understand with you. If you do not, you will be forced to use whatever they might provide you with.
- Answer as many questions as possible in the time given. But be wary of negative marking. WikiJob recommends taking practice reasoning tests for better performance during the examination. Our partner JobTestPrep has copious sample tests to try, until you have really mastered this type of assessment. You may also want to look at this psychometric workbook, which covers numerical, verbal and spatial reasoning tests, with hundreds of practice questions.



All of these projects listed in the above list are the latest computer science project topics for engineering students that are widely implemented by the professionals. We believe that by giving this information, we have been successful to afford you the best list from the lot, and therefore anticipate your suggestions, comments, and queries on this particular article.



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