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"I believe in equality for everyone, except reporters and photographers"

– Mahatma Gandhi

Benefits of doing an Internship in a Company

Well, most of the 3rd year students must have begun their quest for their 'dream internships' by now. Internships can be broadly classified into two types—those done in a company/professional organization and those in a university/research environment. Internships of both natures have their share of benefits. Here I would like to dwell upon some aspect of internships done in a typical company environment.

Company Internships can be particularly beneficial for those who have decided to take up jobs in some organization immediately after their graduation. It is an ideal opportunity for them to seek up the corporate culture and see for themselves if it is to their liking or not. Work culture in a company is a totally novel experience for undergraduate students. Experiencing the work culture and environment of a company and later exchanging views and experiences with batch mates can assist one in deciding as to what profile or type of organization he wants to join.

One can say that a company internship is a short term experience of a job. One gets to know what sort of challenges he'll have to face while working; what kind of routine is followed, etc, which can psychologically prepare a candidate when he enters the job market.

An internship in a company thrusts that extra bit of responsibility on an individual, which can act as a catalyst in bringing out the best result from oneself and throw light on talents which might be latent up till now. This sense of responsibility brings a certain type of maturity in the individual, which can stand in good stead later.

Another plus point of a company internship is learning to interact and work with hierarchy of people. A challenging company internship can develop good managerial, interactive and public relations skill in the individual.

During a company internship, one can actually see the way in which knowledge imparted through theory and courses can be implemented practically.
It is an enriching experience as an engineer—First hand experience of how things work

The most satisfying experience of a company internship can be to see your ideas getting implemented and their outcome benefiting the organization. This can give one immense confidence that one belongs to the professional world.

So friends, go, grab your dream internship

Mohit Shankar Shrivastava
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1938 DuPont discovers Teflon

Polytetrafluoroethylene (PTFE) is a fluoropolymer discovered by Roy J. Plunkett (1910–1994) of DuPont in 1938. It was introduced as a commercial product in 1946 and (in an example of a generalized trademark) and is generally known to the public by DuPont's brand name Teflon®.

PTFE has the lowest coefficient of friction (against polished steel) of any known solid material. It is used as a non-stick coating for pans and other cookware. PTFE is very non-reactive, and so is often used in containers and pipe work for reactive chemicals. According to DuPont its melting point is 327 °C, but its properties degrade above 260 °C.

The story of its discovery is a very interesting one. Annoyed one day that a tank presumably full of tetrafluoroethylene gas was empty, Roy Plunkett investigates and discovers that the gas had polymerized on the sides of the tank vessel. Waxy and slippery, he found that the coating was also highly resistant to acids, bases, heat, and solvents. At first Teflon was used only in the war effort, but it later becomes a key ingredient in the manufacture of cookware, rocket nose cones, heart pacemakers, space suits, and artificial limbs and joints and hence became a essential ingredient of almost everything we use in our daily life.

Fluid Mechanics – Through the Ages

The discipline of fluid mechanics, as taught in engineering institutions and practiced in industries, is perhaps in question because of the changes that took place early in the twentieth century. A review of the important milestones during this era seems to be important at this instant.

It all started from **Greek mathematician Archimedes,** who provided an exact solution to the fluid at rest problems and expressions for the buoyant force on various bodies long before calculus or the modern laws of the mechanics were known. **Leonardo Da Vinci** correctly deduced the conservation of mass equation for incompressible, one-dimensional flows. Leonardo also pioneered the flow visualization genre close to 500 years ago. Much of Leonardo's engineering and scientific observations *(that doesn't have a true mathematical form)* were recorded in a magnificent two-volume book by MacCurdy as "Notebooks of Da Vinci"

When differential calculus was invented and little more than a century and half after the incomparable **Newton**'s Principia mathematica was published in 1687, the first principles of viscous fluid flows were affirmed in the form of the Navier-Stokes equations, with major contributions by **Navier** in 1823, **Cauchy** in 1828, **Poisson** in 1829, **Saint Venant** in 1843, and **Stokes** in 1845. With very few exceptions, the Navier-Stokes equations provide an excellent model for both laminar and turbulent flows. But still *complete analytical solution* of these equations is an *open mathematical challenge*.

In 1904, **Prandtl** introduced the concept of a fluid boundary layer, adjacent to a moving body, where viscous forces are important and outside of which the flow is more or less inviscid. At sufficiently high Reynolds number, the boundary layer is thin relative to the longitudinal length scale and, as a result, velocity derivatives in the stream wise direction are small compared to normal derivatives. That single simplification made it possible for the first time to obtain viscous flow solutions even in the presence of nonlinear terms, at least in the case of laminar flow.

IT-revolution has a major impact in the field of fluid mechanics. The development of Numerical methods to solve differential equations as difference equations paved a new way to solve the jumbo equation of fluid mechanics on the discrete locations of the domain. With a strong literature of ~50 yrs the field of computational fluid dynamics developed and has been providing solutions to a class of realistic problems.

With the trend to follow, computers of the **future** may be able to numerically integrate any problem in fluid mechanics that one is likely to encounter. If the above or similar vision materializes, the question is then what will become to the subject fluid mechanics as taught in engineering and science majors and as a distinct research discipline. Gradually but surely, engineering students will have to rely more on **prepackaged software** and less on problems they may encounter on the campus or in real life. Therefore, if one day computers could solve everything, a paradigm shift in teaching fluid mechanics and perhaps even all of engineering science might be inevitable. But engineers will always need to know some basics of fluid engineering in order to interpret the computational results and to design useful products, but would we still need to teach the Navier- stokes equations and the handful of special problems that can be solved analytically?

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FRESHERS' NITE 2006

The blossoming buds of Y6 batch in the nursery of the Mechanical Engineering Department were hailed with open hearts by the AME on the Fresher's Nite as the trumpet blew to mark the advent of the new batch. The ceremony began in L-7 with a couple of Hindi songs (both solo and duet). But it so happened that the essence of the melodious voices of the singers was subdued by the disharmonic background score. Yet people seemed to enjoy it and greeted the music with a loud applause.

This was followed by a hilarious split-personality act by a 1st year student which made people laugh their brains out. The audience was left in fits of laughter after the immaculate impersonation of Hindi movie stars. Not only the students, but also the faculty appreciated the fine mimicry performance.

Next, the incoming Y6 batch received a warm welcome from Dr. N.N. Kishore, the acting Head of Department. Dr. Kishore explained to the newcomers that they were now going to be a part of a big family that our department is. He appreciated the talent of the stage performers. He also extended to them his best wishes for their future. He also said a few words of appraisal for the superb work being carried out by AME.
After this Dr. Venkitanarayan, the faculty counselor of AME addressed the students. He enlightened the students about the importance of AME in the department and the activities that the AME undertakes throughout the year. Thereafter, the Presidents of both the UG and PG councils briefed us about the things that the AME intends to conduct in the course of this year. The previous year AME office-holders were granted their certificates by the HOD.

The show went on once we were through all this serious stuff. As time passed on, the crowd got more excited. Then came up the so-called 'Dance'. I personally felt sorry for the dancers. The rub of the green was just the wrong way. The hiccoughing music combined with the terribly uncoordinated performance made it more of a comic play than a dance. Perhaps because of their thrilling comic performance, the dancers received a huge applause from the audience. The spectators seemed to be mesmerized by the show.

This was followed by a satirical skit which portrayed in a comic fashion the interview proceedings during placement at IITK. It touched some very subtle aspects of the life here at campus and made us laugh with all its humorous anecdotes.
Thus the stage performances came to a glorious end. Lined up next was a delicious dinner in the LHC foyer. Everyone seemed to be eating up to the best of their capacities. It was a welcome break from the routine torture of our mess food. With their tummies full, everyone departed. It was one of those evenings that will go deep down the memory lanes.

Shubhankar Gosh
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The ideal engineer is a composite ... He is not a scientist, he is not a mathematician, he is not a sociologist or a writer; but he may use the knowledge and techniques of any or all of these disciplines in solving engineering problems.

N. W. Dougherty,

Contributions are invited from all UG and PG students. Send in your entries to shubham@iitk.ac.in