

Computer Architecture

Najeeb-Ur-Rehman

Instructor

Najeeb-Ur-Rehman

- **Assistant Professor** | Faculty of Computing & IT, UoG
- Chairman | Business Plan Competition, (C &IT) UoG
- Member | OADC, UoG
- Web Admin & Member | Website Development Project
- **Assistant Professor** | Teaching @ FAST-National University (2010-2015)
- Founder & Mentor | Programming, Development, E-Gamming, Adventurous, Sports Societies & Clubs
- Advisor | Timetable Management, Scheduling, Hostel & Finance Management
- Development | Web-Portals and Application, Mobile Programming
- Professional Trainer | Active Citizen Program, British Council
- Trainer | Career Consoling ,Time Management, **Aptitude is Key to success**
- Qualification | MS(CS), BS(CS), FAST-National University of Computer & Emerging Sciences (NUCES)
- Research | Trusted Computing, Multi-Agent Systems, Machine Learning
- Nothing is impossible (I M Possible) & *Smart*-Hardworking is key to success.





<http://seanheritage.com/blog/defining-success/>

What does it mean to you to be successful?

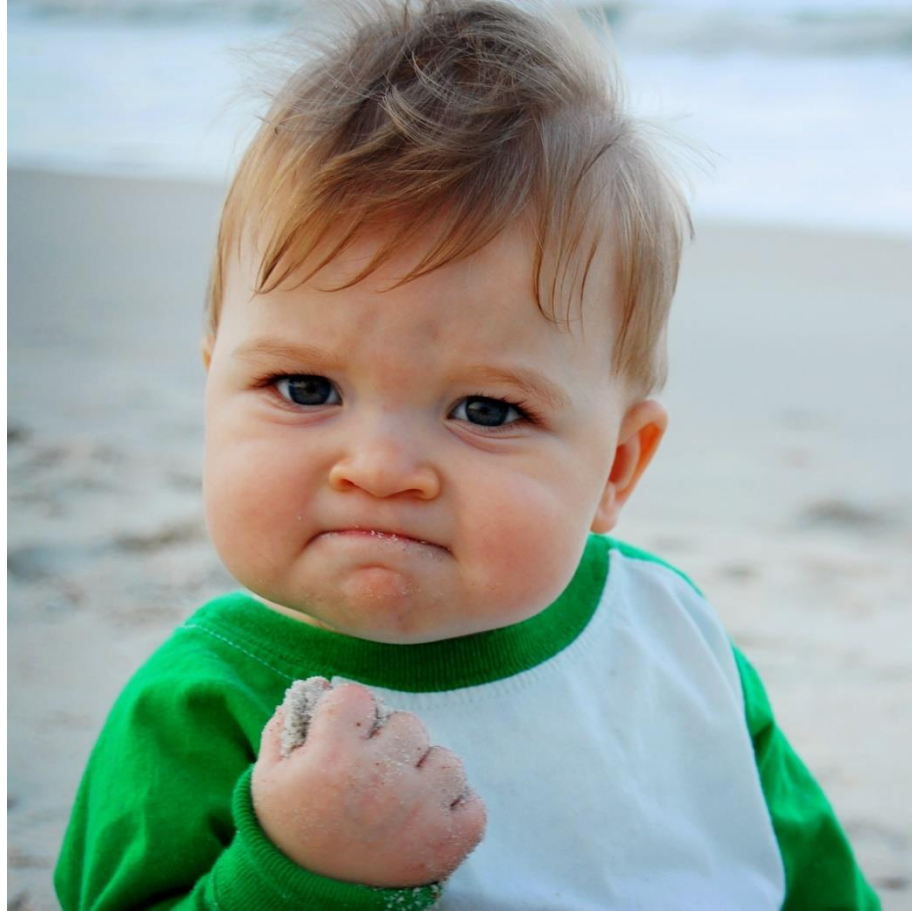
Success has different meaning to different people. It could be:

- Getting all A's and B's while working a full-time job.
- Having a great social life.
- Parenting two great kids and still making the Dean's List.
- Being the first person in my family to earn a bachelors degree.
- Getting a good job afterwards.
- Good grades with minimum or no effort....



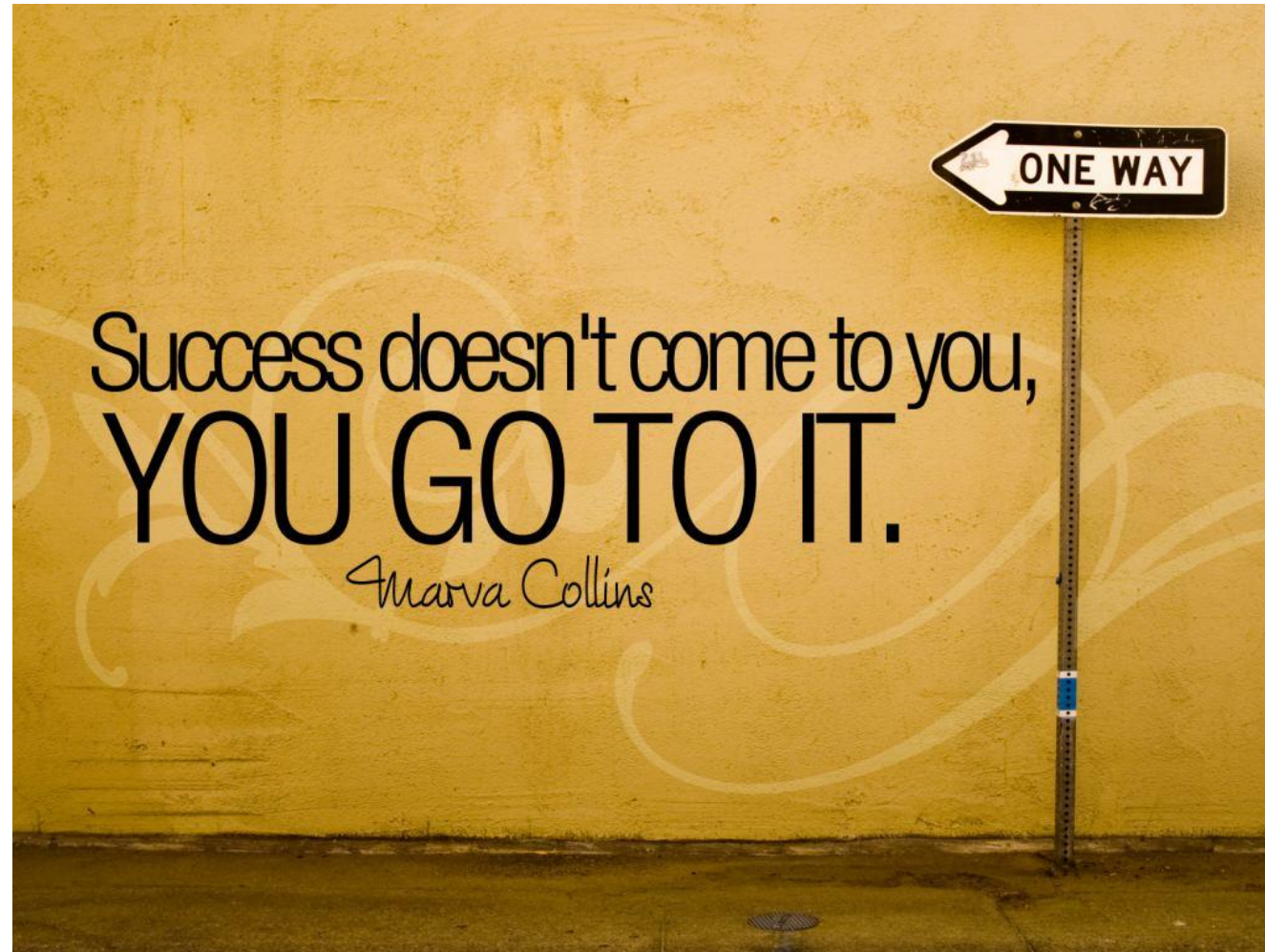
<http://seanheritage.com/blog/defining-success/>

Who wants an A+, A,... in this course???



<http://www.teehanlax.com/blog/success/>

How do you plan to achieve your desired grade?



<http://ksmlifecoaching.com/success-decision/>



SUCCESS



WHAT PEOPLE THINK
IT LOOKS LIKE

WWW.ATB

<http://www.lavishlotus.com/what-success-truly-means/>

SUCCESS



**WHAT PEOPLE THINK
IT LOOKS LIKE**

SUCCESS



**WHAT IT REALLY
LOOKS LIKE**

WWW.ATBREAK.COM

<http://www.lavishlotus.com/what-success-truly-means/>

What is success?

Success is staying on course to your desired outcomes and experiences: creating wisdom, happiness, and unconditional self-worth along the way.



Hard work v/s Smart work

- Hard work - through physic
(involves lot of strain and stress)
- Smart work - through brain and mind
(Accomplishes the same goal as hard work but with less sweat.)



What is Hard work?

- Hard work involves commitment, involvement and seriousness.
- Working hard also means working *honestly*.
- The harder you work, the luckier you get.
- **The only failure is not trying.**

What is Smart Work?

- Working smart is working with a goal in mind, a goal that is meaningful to you.
- It also means knowing what points are high priority and what you can be flexible on, so you can focus on what's important.
- Smart work also refer being creative and looking for other ways to get work done faster.

Smart work vs. Hard work

- Smart working does not mean that you become a shirk and start avoiding hard-work because again same saying comes **“There is no substitute for hard work”**.
- Smart work is essential to ensure we aren't wasting our time doing something that in the end, bring no profit, while hard work teaches that even though how smart we are, how genius we are, how cunning we are, **“Genius is one percent inspiration, ninety-nine percent perspiration,”**-Thomas Edison.
 - i.e., Genius is largely the result of hard work, rather than an inspired flash of insight. This proves that without hard work, even the smartest way of studying can't help us out.

Smart work means hard-work in the right direction.



Work Hard + Work Smart = Wealth and Success

Setting SMART study goals

- **S** *Specific – is my reason for doing the course clear and precise?*
- **M** *Manageable - are the resources and opportunities available?*
- **A** *Attainable – is it within my ability?*
- **R** *Realistic – will my circumstances allow it?*
- **T** *Time – how much time will it involve?*

As a final word, remember –

Rome was not built in a day. Goals are achieved in small steps...

Objective

Learn the basics concepts of computer architecture, and take the advance step to your understating of Technical Advisor



...Achieve excellence in your vocation for that is the way to win the world.

Desired

Determination

Devotion

Dedication

Discipline

CS353-Computer Architecture

MSCS 14

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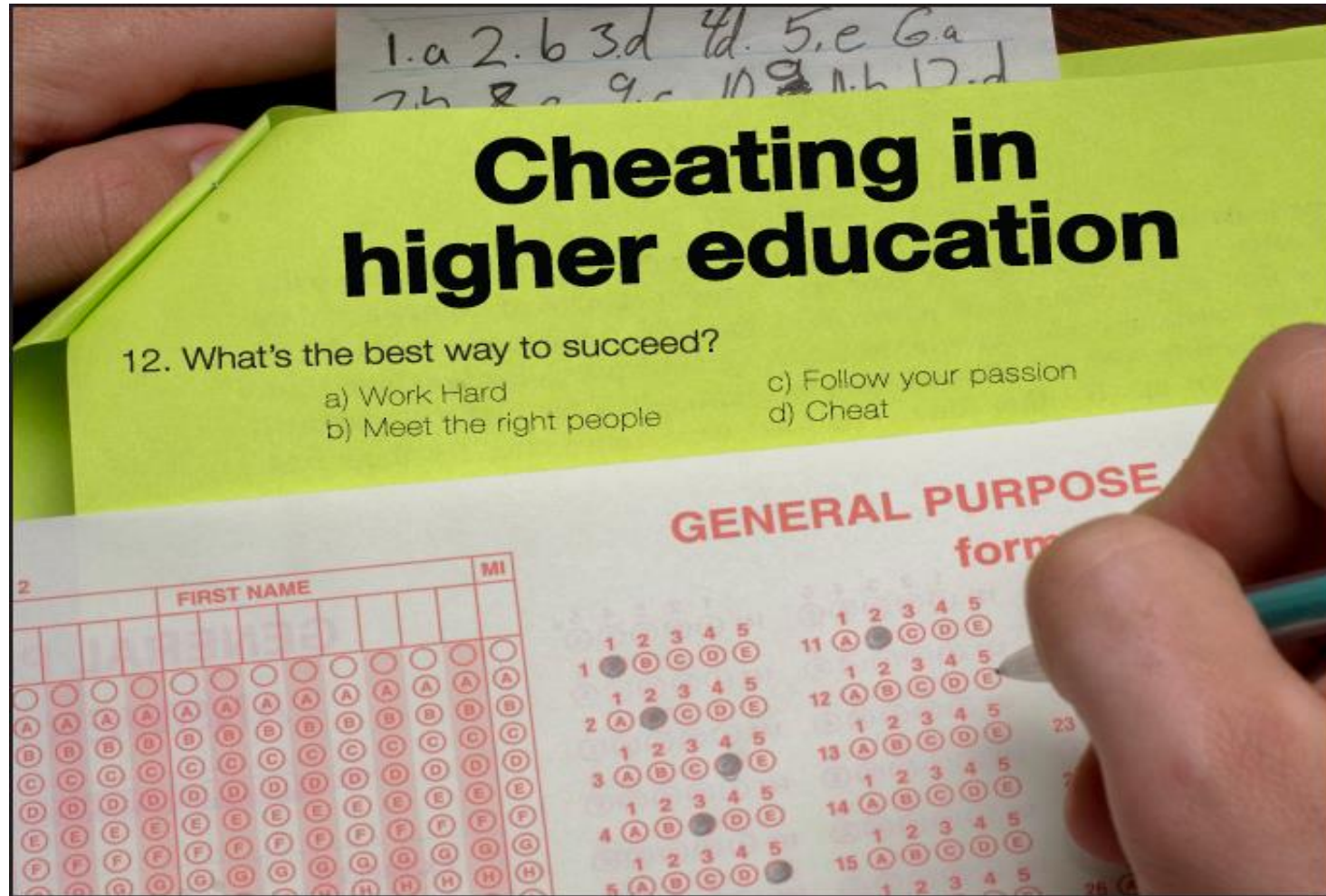
Faculty of Computing & IT

Most Important TIP

- **Learning is the important**
- **Earn your Grades rather than charity**
- **Taking Lecture Notes:**
 - Attend lectures – don't depend on other students' notes
 - Sit where you can hear and see lecturer
 - Use symbols, abbreviations and shortened words
 - Listen for tips and guides from lecturers
- **For Revision Purposes-** Use highlighting, underlining, boxing, ringing, arrows for linking



Cheating



<http://www.unewsonline.com/2013/12/05/cheating-in-higher-education/>

Recap of Previous Lecture

- Introduction
- Definition of Success and how to achieve it.
- Class Discipline and Policy
- Attendance
- Cheating Policy

Computer Architecture

WHY?

- Suppose you enter the industry and is asked to select the most cost-effective computer for use throughout a large organization. An understanding of the implications of spending more for various alternatives, such as a larger cache or a higher processor clock rate, is essential to making the **decision**.
- Many processors are not used in PCs or servers but in embedded systems. A designer may program a processor in C that is embedded in some real-time or larger system, such as an intelligent automobile electronics controller. Debugging the system may require the use of a logic analyzer that displays the relationship between interrupt requests from engine sensors and machine-level code.
- Concepts used in computer architecture find application in other courses. In particular, the way in which the computer provides architectural support for programming languages and operating system facilities reinforces concepts from those areas.

Short Description

- Computer Architecture & Evolution/Revolution (History)
- Computer Performance
- Instruction Set Architecture/Design,
- Processor Implementation Techniques,
- Memory Hierarchy Design
- Design and implementation of a single cycle, multi cycle, and pipelined processor with emphasis on the implementation of control unit and performance of the main functional units, i.e. ALU, Memory and registers.