CSE 1100: Computer Fundamentals and Ethics

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Part I
Motivation

প্রশ্নঃ কাদের CSE প্যাশন?

Theory courses:

Class Participation & Attendance	08
Class Tests (CT)	20
Semester Final Examination	72
Total	100

Sessional courses:

Class Participation & Attendance	08
Quizzes/viva voce	20
Board Viva (Compulsory)	25
Performance/reports	47
Total	100

Class Tests:

1. **Marks of CT will be 20.**
2. **4 CT will be taken.**
3. **Average of 3 best out of 4 class tests will considered.**

Class Attendance:

Attendance	Marks
90% or above	8
85% to less than 90%	7
80% to less than 85%	6
70% to less that 80%	5
60% to less than 70%	4
Less than 60%	0
Less than 50%	X (Grade)

Grading System:

Numerical Grade	Letter Grade	Grade Point
80% or above	A+ (A plus)	4.00
75% to less than 80%	A (A regular)	3.75
70% to less than 75%	A- (A minus)	3.50
65% to less that 70%	B+ (B plus)	3.25
60% to less than 65%	B (B regular)	3.00
55% or less than 60%	B- (B minus)	2.75
50% to less than 55%	C+ (C plus)	2.50
45% to less than 50%	C (C regular)	2.25
40% to less than 45%	D (D regular)	2.00
Less than 40%	F	0.00
Incomplete	X	

Calculation of GPA & CGPA

$$\text{GPA} = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}$$

Where n = the total number of courses passed.

C_i = the number of credits allotted to course i.

G_i = The grade point corresponding to grade award for i-th course.

CGPA

gives the cumulative performance of the student from first semester upto any other semester.

প্রশ্নঃ আপনার মেজর কি আন্ডারগ্রাড এ?

উত্তরঃ Computer Science & Engineering

Computer Science & Engineering

=

Computer Science

+

Computer Engineering

প্রশ্নঃ What is Computer Science?

Computer Science

উত্তরঃ Computer science is the study of processes that interact with data and that can be represented as data in the form of programs.

-From Wikipedia

Computer Science

সহজ বাংলায় Computer Science হচ্ছে Software নিয়ে পড়াশুনা করা।

Software মানে Program দিয়ে কিভাবে Problem সল্ভ করে তাই হচ্ছে Computer Science.

প্রশ্নঃ কিন্তু Program কিভাবে Computer এ run হবে সেটা কি Computer Science handle করবে?

Program Computer এ run হওয়া মানে

↓

কিভাবে Program থেকে Machine Code তৈরি হবে

↓

তারপর সেই Machine Code ই বা কিভাবে Computer run করবে?

উত্তরঃ Computer Science কখনোই Care করে না যে Computer এ কিভাবে Program কিভাবে Run হবে।

প্রশ্নঃ What is Computer Engineering?

Computer Engineering

উত্তরঃ Computer engineering (CE) is a branch of engineering that integrates several fields of computer science and electronic engineering required to develop computer hardware and software.

-From Wikipedia

Computer Engineering

সহজ বাংলায় Computer Engineering হচ্ছে Hardware নিয়ে পড়াশুনা করা।

Hardware মানে Computer কিভাবে তৈরি করা যায় যা Program Run করতে পারে।

Computer Engineering

CSE এর পড়াশুনা আসলে Software এবং Hardware দুইটা নিয়েই।

প্রশ্নঃ CSE পড়ে আমরা কোথায় চাকরি করার স্বপ্ন দেখি?

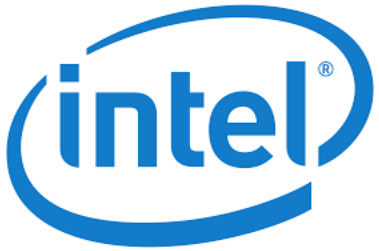
Computer Engineering Jobs

আমরা CSE পড়ে সপ্ন দেখি চাকরি করার




Computer Engineering Jobs

কিন্তু এইসব কোম্পানিতেও চাকরি করা যাবে CSE পড়ে



প্রশ্নঃ আমাদের ডিগ্রি এর নাম কি?

উত্তরঃ Bachelor’s of Science in Computer Science & Engineering

or

BSc in CSE

প্রশ্নঃ Bachelors এবং Diploma/Training degrees এর মধ্যে পার্থক্য কি?

প্রশ্নঃ BSc in CSE Degreeতে কি কি বিষয় পড়ানো হবে?

উত্তরঃ

Software	Hardware
CSE 1101 Computer Programming & LAB (C) CSE 1201 Data Structure & LAB CSE 1203 Object Oriented Programming & LAB (C++,JAVA) CSE 2101 Discrete Mathematics & LAB CSE 2201 Computer Algorithms & LAB CSE 2205 Finite Automata Theory & LAB CSE 3101 Database Systems & LAB (MySQL, Oracle) CSE 3209 Artificial Intelligence & LAB CSE 4103 Digital Signal Processing & LAB CSE 4105 Digital Image Processing & LAB CSE 4201 Computer Graphics and Animations & LAB (OpenGL) CSE 4203 Neural Networks and Fuzzy Systems & LAB CSE 4221 Data Mining CSE 3105 Software Engineering CSE 4107 Information System Analysis and Design & LAB CSE 3205 Computer Networks & LAB CSE 4215 Network Security	CSE 2203 Digital Techniques & LAB CSE 3103 Data Communication & LAB CSE 3109 Microprocessors and Assembly Language & LAB CSE 3201 Operating Systems & LAB CSE 3203 Computer Architecture and Design CSE 3207 Peripherals and Interfacings & LAB CSE 4101 Compiler Design & LAB CSE 4117 Parallel and Distributed Processing CSE 4207 VLSI Design EEE 1151 Basic Electrical Engineering & LAB EEE 2151 Analog Electronics & LAB EEE 2251 Electrical Machines and Instrumentations & LAB

উত্তরঃ

Mathematics	Projects & LAB
CSE 2103 Numerical Methods & LAB CSE 3107 Applied Statistics and Queuing Theory Math 2113 Vector Analysis and Linear Algebra Math1213 Co-ordinate Geometry and Ordinary Differential Equation Math 1113 Differential and Integral Calculus Math 2213 Complex Variable, Differential Equations and Harmonic Analysis	CSE 1100 Computer Fundamentals and Ethics CSE 1200 Analytical Programming CSE 2100 Software Development Project I CSE 3100 Web Based Application Lab/Project CSE 3112 Technical Writing and Presentation CSE 3200 Software Development Project II CSE 4000 Project/Thesis I CSE 4000 Project/Thesis II
Humanities	**Physics & Chemistry**
Hum1213 Economics, Government and Sociology Hum 1113 Functional English & LAB Hum 2113 Industrial Management and Accountancy	Chem1113 Inorganic and Physical Chemistry & LAB Phy 1213 Physics & LAB

প্রশ্নঃ Diploma/Training in Computer এ কি কি বিষয় পড়ানো হবে?

উত্তরঃ

Software	
Computer Application I and II (MS Word, Power Point, Excel, Access) Programming Language-I (C) Object Oriented Programming (C#, .NET) Programming in Java (JAVA) Data Structure & Algorithm Database Application Database Management System (MySQL, Oracle) Advanced Database Management System Principals of Software Engineering System Analysis & Design	Data Communication System Network Administration & Services (CCNA Configuration) Operating System application (Linux OS) Web Development (HTML, CSS, Jquery, AngularJS, Bootstrap, PHP, MySQL) Network & Data Center Operation (Web server + Linux OS) Web Mastering E-Commerce & CMS (Wordpress/Drupal/Joomla) Cyber Security & Ethics (Penetration Testing) Graphics Design-I (Adobe Photoshop) Computer Graphics & Animation Design (Blender) Multimedia and Animation (Adobe AfterEffect, Video Editing) Apps Development Project (Android) Game Development (Unity)

উত্তরঃ

Hardware
IT support System-I Computer Peripherals Electrical Engineering Fundamentals Analog Electronics Digital Electronics-1 Industrial Electronics Principle of Digital Electronics Sequential Logic System PCB Design & Circuit Making Microprocessor & Interfacing Microcontroller Application Embedded System Design Surveillance Security System

প্রশ্নঃ Which is Better?
Bachelor’s Degree or Diploma Degree?

প্রশ্নঃ Bachelors এবং Diploma/Training degrees এর মধ্যে পার্থক্য কি?

প্রশ্নঃ এই Courseএ কি শিখবো?

উত্তরঃ আমরা CSEতে চার বছরে যত কোর্স পড়ানো হবে তার একটা Overview নিব।

CSE **1100** Marks Distribution

Attendance	**08**
Performance	**42**
Final Quiz	**25**
Board Viva	**25**
Total	**100**

CSE **1100** Marks Distribution

There will be 12 quizzes in total (7 marks (will be converted to 3.5) each) which will be held at beginning of class.

12*3.5 = 42

Part II
Programming

প্রশ্নঃ CSEতে Programming কতটা Important?

উত্তরঃ CSEতে Programming ছাড়া কিছু নাই।

প্রশ্নঃ CSEতে Programming ছাড়া কোন ভালো কিছু করা সম্ভব?

উত্তরঃ CSE programming ছাড়া কিছু করা সম্ভব না।
সেটা Software Industry হোক আর Hardware Industry হোক।

প্রশ্নঃ Programming দিয়ে আসলে আমরা কি কাজ করি?

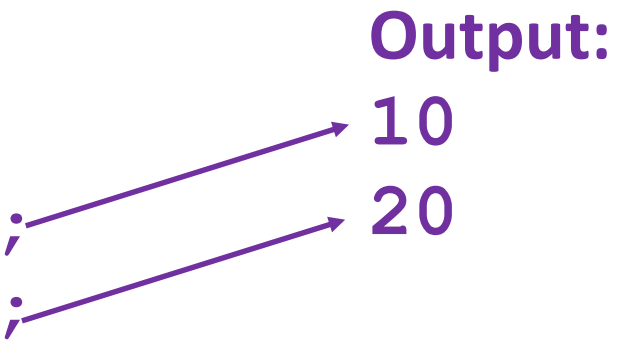
উত্তরঃ পৃথিবীতে যেকোন Programming Language আসলে তিনটা কাজ করেঃ

1. Arithmetic and Logic Operations
2. Branching
3. Looping

Variables:

```
int A = 10;
int B = 20;

printf("A = %d\n", A);
printf("B = %d\n", B);
```



Arithmetic and Logic Operations:

Arithmetic Operators

Operator	Example
+	A + B = 30
−	A − B = -10
*	A * B = 200
/	B / A = 2
%	B % A = 0

Arithmetic and Logic Operations:

Arithmetic Operators Example

```
int A = 10;
int B = 20;

int C = A+B;
printf("C = %d\n", C);

int D = B/A;
printf("D = %d\n", D);
```

Arithmetic and Logic Operations:

Relational Operators

Operator	Example
==	(A == B) is not true.
!=	(A != B) is true.
>	(A > B) is not true.
<	(A < B) is true.
>=	(A >= B) is not true.
<=	(A <= B) is true.

Arithmetic and Logic Operations:

Relational Operators Example

```
int A = 10;
int B = 20;

int C = (A==B);
printf("C = %d\n", C);

int D = (B<A);
printf("D = %d\n", D);
```

Output:

```
0
1
```

Here:

0 means False

1 means True

Arithmetic and Logic Operations:

Logical Operators

Operator	Example
&&	(A && B) is false.
||	(A || B) is true.
!	!(A && B) is true.

Arithmetic and Logic Operations:

Arithmetic Operators Example

```
int A = 0;
int B = 20;
int C = -5;

int D = (A && B);
printf("D = %d\n", D);

int E = (B || A);
printf("E = %d\n", E);

int F = (B && C);
printf("F = %d\n", F);

int G = !A;
printf("G = %d\n", G);
```

Output:

```
0
1
0
1
```

```
Since A is 0, A is False (0)
Since B is 20(nonzero), B is True (1)
Since C is -5(nonzero), C is True (1)

So, A&&B = 0 AND 1 = 0
So, B||A = 1 OR 0 = 1
So, B&&C = 1 AND 1 = 1
So, !A = NOT 0 = 1
```

Branching : Decision Making

```
int a = 10;

if( a < 20 )
{
     printf("a is less than 20\n" );
}
else
{
     printf("a is not less than 20\n" );
}
```

Output:

```
a is less than 20
```

Branching : Decision Making

```
int A = 10;
int B = 20;

 if (A != B)
 {
     printf("A is not equal to B\n");
 }
 else if (A > B)
 {
     printf("A is greater than B\n");
 }
 else if (B > A)
 {
     printf("B is greater than A\n");
 }
 else
 {
     printf("A is equal to B\n");
 }
```

This condition is False.
Because 10!=20.

This condition is False.
Because 10<20.

This condition is True.
Because 10<20.

This condition will not be reached
because previous condition is true.

Output:

```
B is greater than A
```

Looping : Repeating the same tasks.

```
int a = 10;
while( a < 20 )
{
   printf("Value of a: %d\n", a);
   a = a + 1;
}
```

Loop will continue until this condition is False.

Initially,
When a = 10, a<20 condition is true.

At the end,
When a = 20, a<20 condition will be false.

a = a + 1;
This statement will increment a after each iteration.

When a = 10, a = a+1=10+1=11
When a = 11, a = a+1=11+1=12
When a = 12, a = a+1=10+1=13
……

Output:

```
Value of a:10
Value of a:11
Value of a:12
Value of a:13
Value of a:14
Value of a:15
Value of a:16
Value of a:17
Value of a:18
Value of a:19
```

Quiz: There will be 5 marks (out of 7 marks) from Part II – Programming.

Thank You ☺