STAMFORD UNIVERSITY BANGLADESH

Department of Computer Science and Engineering
Term X Examination, Spr./Sum//Fall YYYY Semester
Course Code: Course Title
CT: Faculty Name
Date and Time: dd/MM/YYYY, HH:MM - HH:MM

Batch: CSE-S-XX-X   **Campus:** Siddeswari
Duration: 2 hours   **Full Marks:** 30 marks

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*(There are **FOUR** questions. **Answering all of them is mandatory**. Figures in the right margin indicate CLOs and marks. Writing anything on the question paper is strictly prohibited.)*

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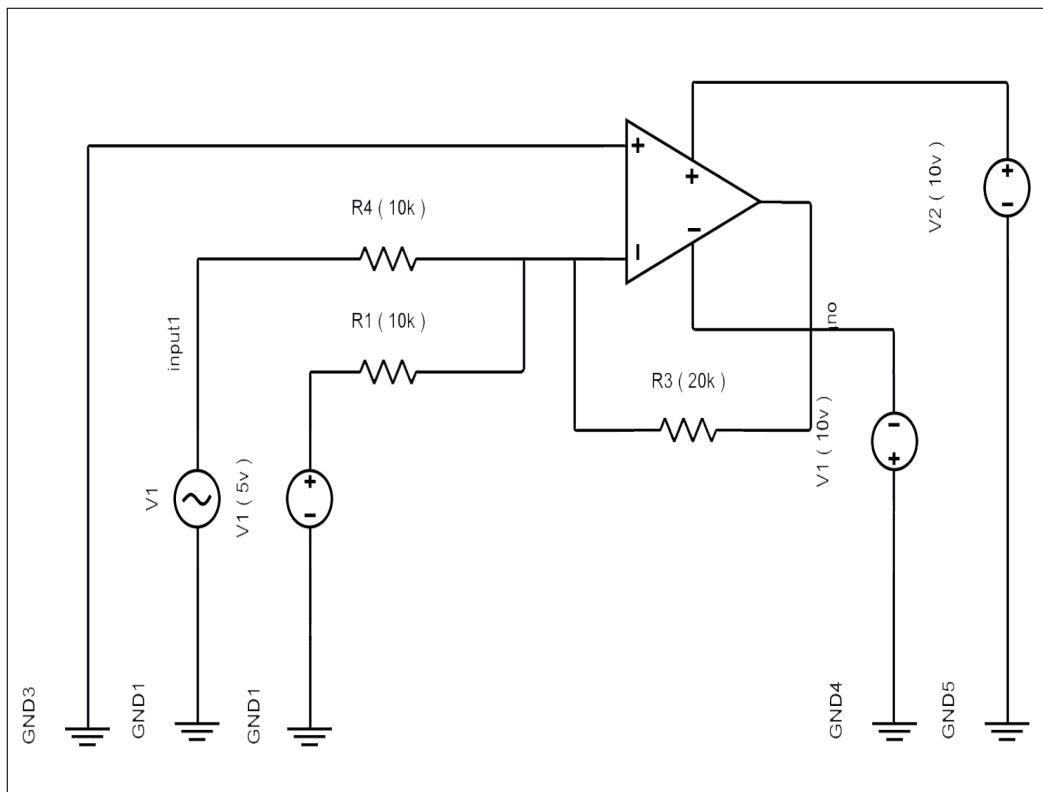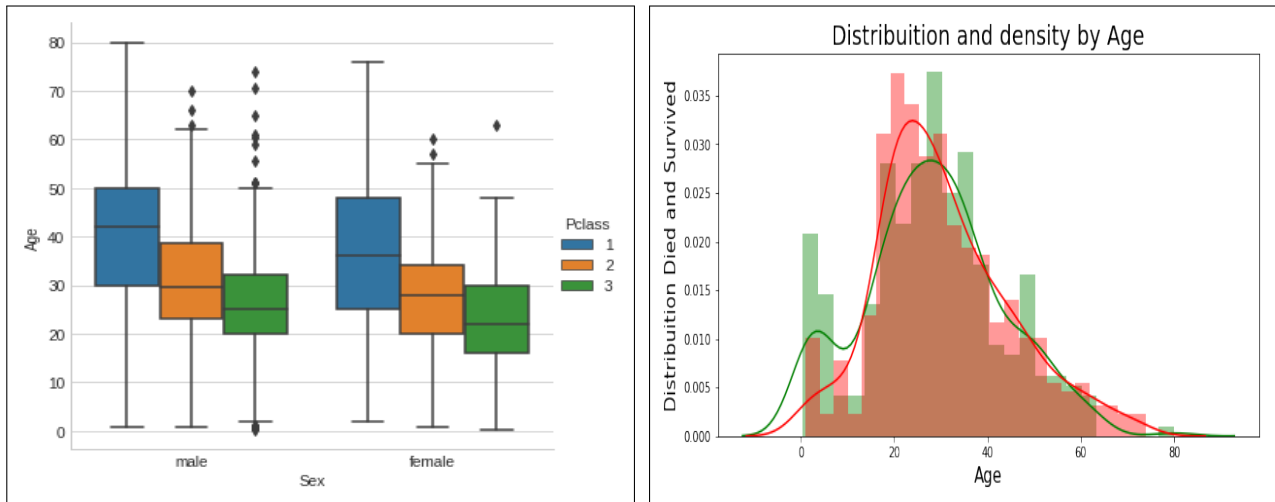
   Now, take a look at a figure.

Figure 1: A basic OP-Amp circuit

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(a) A boxplot   (b) A histogram

Figure 2: EDA from the titanic dataset

As a potential data scientist, try to find out the following:

(a)   i. Sub task 1.   (3)

      ii. Sub task 2.

(b) Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum   (3)
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$$\text{net}_j = \sum_i W_{ij} x_{ij} = W_{0j} x_{0j} + W_{1j} x_{1j} + \cdots + W_{Ij} x_{Ij}$$

Do the following tasks:

      i. Sub task 1.

      ii. Sub task 2.

(c) Task description   (4)

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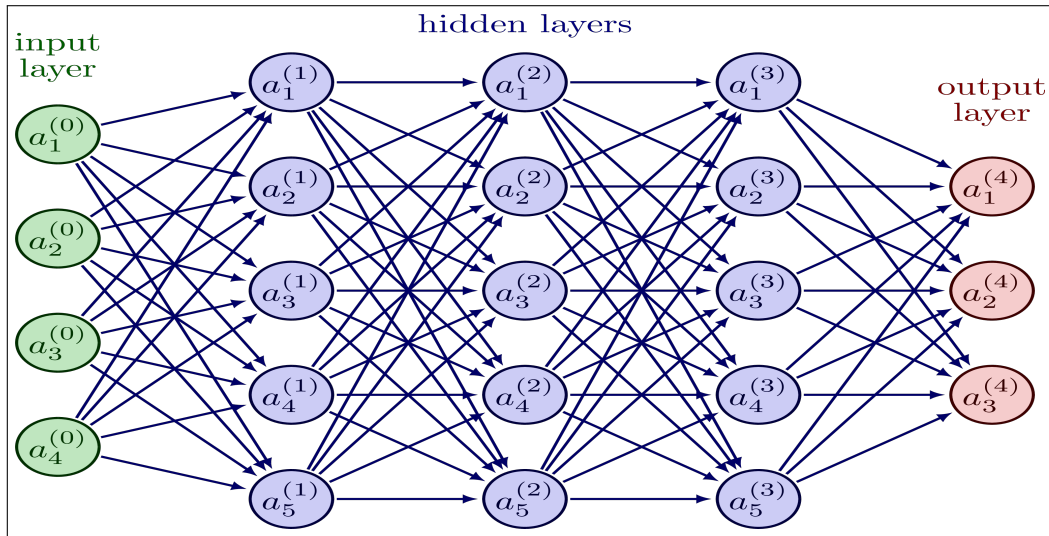

Figure 3: Architecture of the neural network

The weights of the neural network are randomly set as follows: The weights of the neural network are randomly set as follows:

Table 1: Weights of the neural network

$x_0 = 1$	$W_{0e} = 0.5$	$W_{0f} = 0.5$	$W_{0g} = 0.5$		$W_{0h} = 0.25$
$x_a = 0.8$	$W_{ae} = 0.5$	$W_{be} = 0.9$	$W_{ce} = 0.6$	$W_{de} = 0.6$	$W_{eh} = 0.9$
$x_b = 0.3$	$W_{af} = 0.5$	$W_{bf} = 0.9$	$W_{cf} = 0.6$	$W_{df} = 0.8$	$W_{fh} = 0.9$
$x_c = 0.6$	$W_{ag} = 0.4$	$W_{bg} = 0.8$	$W_{cg} = 0.6$	$W_{dg} = 0.6$	$W_{gh} = 0.8$
$x_d = 0.6$					

(a) Now perform the following task (6)

    i. Calculate the value of $(1 + \frac{1}{\exp^{-x}})$.

    ii. Task 2.

(b) Take a look at the given Figure 1 and do task 1. (4)

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====== Best of Luck ======

Appendix

Table 2: T-table of Confidence interval estimate

t PERCENTAGE POINTS

ν	60.0%	66.7%	75.0%	80.0%	87.5%	90.0%	95.0%	97.5%	99.0%	99.5%	99.9%
1	0.325	0.577	1.000	1.376	2.414	3.078	6.314	12.706	31.821	63.657	318.31
2	0.289	0.500	0.816	1.061	1.604	1.886	2.920	4.303	6.965	9.925	22.327
3	0.277	0.476	0.765	0.978	1.423	1.638	2.353	3.182	4.541	5.841	10.215
4	0.271	0.464	0.741	0.941	1.344	1.533	2.132	2.776	3.747	4.604	7.173
5	0.267	0.457	0.727	0.920	1.301	1.476	2.015	2.571	3.365	4.032	5.893
6	0.265	0.453	0.718	0.906	1.273	1.440	1.943	2.447	3.143	3.707	5.208
7	0.263	0.449	0.711	0.896	1.254	1.415	1.895	2.365	2.998	3.499	4.785
8	0.262	0.447	0.706	0.889	1.240	1.397	1.860	2.306	2.896	3.355	4.501
9	0.261	0.445	0.703	0.883	1.230	1.383	1.833	2.262	2.821	3.250	4.297
10	0.260	0.444	0.700	0.879	1.221	1.372	1.812	2.228	2.764	3.169	4.144
11	0.260	0.443	0.697	0.876	1.214	1.363	1.796	2.201	2.718	3.106	4.025
12	0.259	0.442	0.695	0.873	1.209	1.356	1.782	2.179	2.681	3.055	3.930
13	0.259	0.441	0.694	0.870	1.204	1.350	1.771	2.160	2.650	3.012	3.852
14	0.258	0.440	0.692	0.868	1.200	1.345	1.761	2.145	2.624	2.977	3.787
15	0.258	0.439	0.691	0.866	1.197	1.341	1.753	2.131	2.602	2.947	3.733
16	0.258	0.439	0.690	0.865	1.194	1.337	1.746	2.120	2.583	2.921	3.686
17	0.257	0.438	0.689	0.863	1.191	1.333	1.740	2.110	2.567	2.898	3.646
18	0.257	0.438	0.688	0.862	1.189	1.330	1.734	2.101	2.552	2.878	3.610
19	0.257	0.438	0.688	0.861	1.187	1.328	1.729	2.093	2.539	2.861	3.579
20	0.257	0.437	0.687	0.860	1.185	1.325	1.725	2.086	2.528	2.845	3.552
21	0.257	0.437	0.686	0.859	1.183	1.323	1.721	2.080	2.518	2.831	3.527
22	0.256	0.437	0.686	0.858	1.182	1.321	1.717	2.074	2.508	2.819	3.505
23	0.256	0.436	0.685	0.858	1.180	1.319	1.714	2.069	2.500	2.807	3.485
24	0.256	0.436	0.685	0.857	1.179	1.318	1.711	2.064	2.492	2.797	3.467
25	0.256	0.436	0.684	0.856	1.178	1.316	1.708	2.060	2.485	2.787	3.450
26	0.256	0.436	0.684	0.856	1.177	1.315	1.706	2.056	2.479	2.779	3.435
27	0.256	0.435	0.684	0.855	1.176	1.314	1.703	2.052	2.473	2.771	3.421
28	0.256	0.435	0.683	0.855	1.175	1.313	1.701	2.048	2.467	2.763	3.408
29	0.256	0.435	0.683	0.854	1.174	1.311	1.699	2.045	2.462	2.756	3.396
30	0.256	0.435	0.683	0.854	1.173	1.310	1.697	2.042	2.457	2.750	3.385
35	0.255	0.434	0.682	0.852	1.170	1.306	1.690	2.030	2.438	2.724	3.340
40	0.255	0.434	0.681	0.851	1.167	1.303	1.684	2.021	2.423	2.704	3.307
45	0.255	0.434	0.680	0.850	1.165	1.301	1.679	2.014	2.412	2.690	3.281
50	0.255	0.433	0.679	0.849	1.164	1.299	1.676	2.009	2.403	2.678	3.261
55	0.255	0.433	0.679	0.848	1.163	1.297	1.673	2.004	2.396	2.668	3.245
60	0.254	0.433	0.679	0.848	1.162	1.296	1.671	2.000	2.390	2.660	3.232
∞	0.253	0.431	0.674	0.842	1.150	1.282	1.645	1.960	2.326	2.576	3.090
ν	60.0%	66.7%	75.0%	80.0%	87.5%	90.0%	95.0%	97.5%	99.0%	99.5%	99.9%