Vrije Universiteit, Faculteit Exacte Wetenschappen,
Afdeling Informatica

Herkansing Tentamen **Pervasive Computing**
8 Februari 2010

Dit is een gesloten boek tentamen.

Tijdens het tentamen mogen geen schriftelijke of elektronische artikelen worden geraadpleegd.

De antwoorden kunnen in het Nederlands of Engels gegeven worden.

Er zijn 5 tentamenvragen, Q1..Q5 en de som ervan is maximaal 90p.

Het tentamencijfer wordt berekend als: (Q1+Q2+...Q5+10)/100

Het eindcijfer wordt berekend als 0.4*practicum + 0.6*tentamen.

Beide onderdelen moeten >= 5.5 zijn voor een voldoende.

	Q1	Q2	Q3	Q4	Q5	ΣQi	Maximum = (ΣQi+10)/10
a)	5	5	5	10	10		
b)	10	10	10	5	5		
c)			5		5		
d)			5				
e)							
Totaal	15	15	25	15	20	90	10

SUCCES!

Q1.Ubiquitous computing vision. DEI model. [15p]

a) [5p] Enumerate the 5 core Ubicom system properties according to the DEI model..
b) [10p] Describe an ubicom system with at least 2 of the properties from a) that can enhance the public transport scenario.

Q2. Smart devices and services [15p]

a) [5p] Enumerate the primary tasks of a smart card operating system
b) [10p]. There are different service architecture models possible depending on how the A (access), P (processing), C (communication) and I (information) components are distributed. Describe shortly 2 possible models, show in both cases how are the A,P,C and I components distributed and give for both a real life example.

Q3. Tagging & sensing [25p]

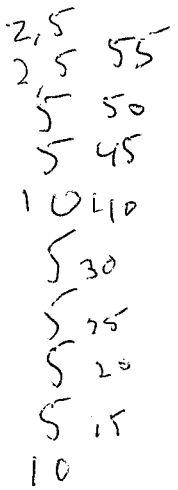
a) [5p] Compare passive and active RFID.
b) [10p]What is a smart sensor? Draw a diagram and explain the role of each component.
c) [5p] Explain how does Time of Arrival (ToA) method work.
d) [5p] What is a hard real-time system? Give an example.

Q4. Intelligent systems [15p]

a) [10p] Draw a diagram of a reactive intelligent system (R-IS) and explain how it works.
b) [5p] Give an example of a R-IS.

Q5. Communication.[20p]

a) [10p] What is a parity bit? Show how this works for example for uneven parity when the string "Test" is typed on the keyboard. ASCII table is provided.
b) [5p] What is data rate? Calculate the data rate of a 2MHz square wave signal.
c) [5p] What is a body area network? Give an example and draw a diagram.



c	Hx	Oct	Char
0	000	NUL	(null)
1	001	SOH	(start of heading)
2	002	STX	(start of text)
3	003	ETX	(end of text)
4	004	EOT	(end of transmission)
5	005	ENQ	(enquiry)
6	006	ACK	(acknowledge)
7	007	BEL	(bell)
8	010	BS	(backspace)
9	011	TAB	(horizontal tab)
A	012	LF	(NL line feed, new line)
B	013	VT	(vertical tab)
C	014	FF	(NP form feed, new page)
D	015	CR	(carriage return)
E	016	SO	(shift out)
F	017	SI	(shift in)
10	020	DLE	(data link escape)
11	021	DC1	(device control 1)
12	022	DC2	(device control 2)
13	023	DC3	(device control 3)
14	024	DC4	(device control 4)
15	025	NAK	(negative acknowledge)
16	026	SYN	(synchronous idle)
17	027	ETB	(end of trans. block)
18	030	CAN	(cancel)
19	031	EM	(end of medium)
1A	032	SUB	(substitute)
1B	033	ESC	(escape)
1C	034	FS	(file separator)
1D	035	GS	(group separator)
1E	036	RS	(record separator)
1F	037	US	(unit separator)

Dec	Hx	Oct	Html	Chr
32	20	040		Space
33	21	041	!	!
34	22	042	"	"
35	23	043	#	#
36	24	044	$	$
37	25	045	%	%
38	26	046	&	&
39	27	047	'	'
40	28	050	(	(
41	29	051	)	)
42	2A	052	*	*
43	2B	053	+	+
44	2C	054	,	,
45	2D	055	-	-
46	2E	056	.	.
47	2F	057	/	/
48	30	060	0	0
49	31	061	1	1
50	32	062	2	2
51	33	063	3	3
52	34	064	4	4
53	35	065	5	5
54	36	066	6	6
55	37	067	7	7
56	38	070	8	8
57	39	071	9	9
58	3A	072	:	:
59	3B	073	;	;
60	3C	074	<	<
61	3D	075	=	=
62	3E	076	>	>
63	3F	077	?	?

Dec	Hx	Oct	Html	Chr
64	40	100	@	@
65	41	101	A	A
66	42	102	B	B
67	43	103	C	C
68	44	104	D	D
69	45	105	E	E
70	46	106	F	F
71	47	107	G	G
72	48	110	H	H
73	49	111	I	I
74	4A	112	J	J
75	4B	113	K	K
76	4C	114	L	L
77	4D	115	M	M
78	4E	116	N	N
79	4F	117	O	O
80	50	120	P	P
81	51	121	Q	Q
82	52	122	R	R
83	53	123	S	S
84	54	124	T	T
85	55	125	U	U
86	56	126	V	V
87	57	127	W	W
88	58	130	X	X
89	59	131	Y	Y
90	5A	132	Z	Z
91	5B	133	[	[
92	5C	134	\	\
93	5D	135	]	]
94	5E	136	^	^
95	5F	137	_	_

Dec	Hx	Oc	Html	Chr
96	60	140	`	`
97	61	141	a	a
98	62	142	b	b
99	63	143	c	c
100	64	144	d	d
101	65	145	e	e
102	66	146	f	f
103	67	147	g	g
104	68	150	h	h
105	69	151	i	i
106	6A	152	j	j
107	6B	153	k	k
108	6C	154	l	l
109	6D	155	m	m
110	6E	156	n	n
111	6F	157	o	o
112	70	160	p	p
113	71	161	q	q
114	72	162	r	r
115	73	163	s	s
116	74	164	t	t
117	75	165	u	u
118	76	166	v	v
119	77	167	w	w
120	78	170	x	x
121	79	171	y	y
122	7A	172	z	z
123	7B	173	{	{
124	7C	174			|
125	7D	175	}	}
126	7E	176	~	~
127	7F	177	&#127;	DEL

Source: www.pubblinet.co

ASCII table