Index

A
access control 139, 140
access control (AC) policies 185, 186, 188, 190
access control manager 180
access control mechanisms 130, 131, 134, 140, 146, 148
active floor 80, 81
activities of daily living (ADL) monitoring 1, 5, 6, 7, 14, 18
Activities of Daily Living (ADL) scale 299, 300, 318, 320
activity monitoring 78, 79, 94
activity recognition 30
activity recognition system 100
actors 299, 300, 304, 306, 308, 316
actuators 251
adaptive health care 157
adaptive mapping to realization (AMR) methodology 121, 122
ad hoc networks 156
adult day health care (ADHC) 41
agent-centered context-awareness (ACCA) approaches 135
agents 131, 135, 139, 145, 146, 148
agent technology 131
AgeTech group 295, 306, 307, 311, 316
aggregation layer 252
aging populations 1, 78, 98, 155, 296, 322, 323, 326, 327, 332
aging societies 26, 295, 296, 302, 306
AHLTA-Mobile 100, 111
Alabama, University of 158
ALARM-NET wireless sensor network 157, 161, 165, 171
ALFs 44
Alzheimer’s disease 32
ambient assisted living 79, 93
ambient intelligence 302
American healthcare system 3
American National Standards Institute (ANSI) 284
American residential aged care market 39, 40, 42
AMRIS 255, 281
analog-to-digital (A/D) converter 199, 218
application layer 251, 252, 253, 255, 257, 263, 264, 265, 267, 269, 271, 272, 273, 274, 276, 278
application server 139
ARIB STD-T67 287
Arizona State University 158
ARTEMIS system 100, 112
arterial hypertension 27
artificial intelligence (AI) technologies 29
assisted living facilities (ALF) 44, 72
asynchronous digital subscriber line (ADSL) 201
atlas transformation language (ATL) 256, 269, 279
attributed graph grammar 255
Australia 1, 2, 3, 4, 6, 13, 14, 16, 18, 21, 114, 115, 116, 122, 123, 124, 125, 126, 127, 128, 129
Australia, Commonwealth Government of 2
Australia, diabetes in 115
Australian health scene 115
Australian health system 116
Australian residential aged care market 3
Austria 34
automatic health monitoring 283
Autominder reminder system 29, 38
autonomous living 251, 277
Ayushman wireless sensor network 158, 161, 171

B
baby-boom generation 296
base station 79, 80, 156, 157, 158, 159, 164, 165, 167
Bavarian Research Foundation 310, 311, 316
behavioral intervention services 41
Belgium 33
biomedical sensor networks 155, 156, 157, 158, 159, 160, 161, 165, 166, 167, 168, 169
biomedical sensor network, security threats with 158
biomedical wireless sensor networks (BWSN) 156
bio-monitoring 198
biosensors 199
biosignals 199
block cipher algorithms 162
blood pressure 155, 156, 158, 160, 166, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292
BMIST-J 100, 111
body area network (BAN) 100, 158, 299, 300, 303, 305, 308, 316
body sensor networks (BSN) 98, 157, 160, 284
business process execution language (BPEL) 131, 132, 134, 137, 138, 139, 140, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151
byte name (BN) code 286, 287, 289

C
California RHIO (CalRHIO) 175
care quota 296
CAS architecture 141
Cassandra logical language 186, 193
C-CARE HIS 133, 149
C# code 254
cellular backhauls 101
cellular networks 98
certificates 141, 142
Circadian activity rhythm (CAR) analysis 157
Cleveland Medical Devices (CleveMed) 100, 111
clinical data management systems 284
clinical laboratory services 41
CodeBlue project 13, 22, 255
CodeBlue sensor network infrastructure 101, 102
CodeBlue wireless sensor network 157, 161, 164
cognitive abilities 29, 30
cognitive efficiency 299
cognitive stimulation systems 3
Colored Petri Nets 256
coma management 42
comas 42
Common Language Runtime 254
communication and entertainment systems 25, 27, 31
community authorization service (CAS) 141, 142, 145, 146, 147
computational infrastructures 229
computer-based rehabilitation systems 3
colference for the IEEE Engineering in Medicine and Biology Society (EMBC) 303, 317, 320
context-aware infrastructures 134
context-aware mobile communication system (CHIS) 230, 231, 232, 233, 234, 235, 242, 243, 249
context-awareness 252, 253, 254, 264, 277
context-aware pill bottle 31
context-aware systems 229
Continua Health Alliance 291
Crossbow hardware 254
Crossbow wireless sensor network 100

D
daily activities 26, 32
daily living monitoring 23, 24
Danish Healthcare Data Network 175, 195
data acquisition layer 252, 256, 258, 260, 261, 264, 277
data acquisition system 283, 285, 291
data fusion 7, 18, 23
data gathering 197
data interoperability 198
Datalog language 186
data marts 122
data processing methods 1
data storage platforms 131
data transmission protocols 284
data transmission system 285
data warehouses 122
dementia 299
demographic wave 296
denial of service (DoS) attacks 159
Denmark 34
diabetes 114, 115, 116, 117, 121, 122, 123, 124, 125, 126, 127, 128, 129
diabetes patients 114, 115, 116, 124
diabetes self-management 116, 117, 122, 126, 129
Digital Family Portrait communication device 31, 32
digital rights management (DRM) 185
digital video broadcasting with return channel via satellite (DVB-RCS) technology 201, 202, 203, 204, 223
Directed Diffusion 255
discretionary access control (DAC) 185, 186
distributed systems 98
district general hospital (DGH) 135, 137, 138, 140, 141, 143, 145
DOC@HAND HIS 133, 149
DOCMEM HIS 133, 151

E
ECG data 157, 160
ECG monitoring 283
Eclipse Modeling project 256, 278
eGK project 176
e-health monitoring 197, 201, 222
EHR servers 176
elderly care 78, 79, 80, 81, 83, 84, 85, 86, 87, 89, 90, 91, 92, 94, 252, 297, 299
elderly care, pervasive application in 79
elderly population 2, 3, 4, 6, 8, 15, 17, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 174, 191, 192, 282, 283, 284
electrical lines, 220/240v 28
electroencephalogram (EEG) systems 198, 210, 211, 217
electronic healthcare 282
electronic health record (EHR) systems 172, 173, 174, 175, 176, 177, 182, 184, 186, 188, 192, 194, 195
electronic medical record (EMR) 175, 176, 177, 230
electronic medical records 101
electronic patient records 198
eLife-Card 176
elliptic curve cryptography (ECC) 164
embedded systems 98, 100
emergency response 156
emergency response telephones 26
emotional support 27
Energy Aware Routing 255
energy-control-systems 25, 27, 29
Ensenada, Mexico 230
entertainment systems 3
environmental control systems 25, 27, 28, 34
Europe 26, 32, 33, 38
European Accreditation Council for Continuing Medical Education (EACCME) 303
European Space Agency (ESA) 201
event-based access control (EBAC) model 187, 188, 189, 190
execution monitoring 30

F
falling 79
false data injection attack 159
fertility rates 2
Finland 34
Fit4Age 310, 311
Fit4Life 307, 311, 316
Index

Fit4Mobility 307, 308, 309, 310, 316
Florida 176
force measuring systems 81
ForSe FIElds 81, 95
forward link (FL) 202
France 33, 34

G
Gematik 176
general packet radio services (GPRS) 198, 200, 215, 216, 220, 222
general practitioners (GP) 116
Geographic Hash Tables 255
Georgia Tech 284, 303, 304
Georgia Tech Wearable Motherboard 199, 200
GeorgiaTech Wearable Motherboard 303
Germany 34, 176, 195, 295, 296, 297, 298, 303, 317, 318, 319, 321
gerontology 299
Gewa Prog III project 28
GPS location systems 79
graph transformations 255
Greece 34
Greedy Perimeter Stateless Routing 255
grid database services 131, 132, 134, 135, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 151
grid middleware technology 131
grid portal application 130, 131, 132, 152
grid portals 139
Grid Security Infrastructure (GSI) 141

H
handheld devices 198
hardware manager 180
hash functions 160
healthcare data 173
healthcare delivery 130, 155
healthcare delivery organizations 322, 331
healthcare delivery system 322, 326, 331, 333
healthcare, emergency 130
healthcare folders 172, 173, 174, 175, 176, 186, 192
healthcare folders, pervasive 173
healthcare information 173
healthcare information systems (HIS) 130, 131, 132, 133, 134, 139, 147, 148, 173, 174, 175, 230, 245, 249, 284
healthcare information systems (HIS), grid-based 133
healthcare information systems (HIS), process-oriented 135
healthcare, in-patient 130
healthcare, long-term 40, 45, 51, 54, 55, 61, 63, 71, 72, 74, 75, 77
healthcare monitoring 123
healthcare, out-patient 130
healthcare, pervasive applications in 78
healthcare practitioners 172, 173, 174, 175, 177, 184, 186, 190, 191, 192
healthcare processes, cross-organizational 135
healthcare professionals 198, 221
healthcare providers 197, 201
healthcare services 130, 131, 133, 148, 197, 201, 202, 208, 209, 222
healthcare staffing issues 3
healthcare systems 2
health data, alteration of 159
health data, summary 176
health data, unauthorized access to 159
health districts 131, 135, 138, 139, 140, 141, 145, 148
Health eCard 176
health informatics 283
health information spaces 131
Health Passport Project (HPP) 176
health professionals 155
health promotion 282
heart rate 198, 200, 204, 208, 211, 216, 217, 220
heart rate (HR) 100, 101, 106
Hermes mobile guide 29
HIS architecture 131, 134, 148
HIS architecture, grid-enabled 131
home care 323
home care systems 198, 209, 302, 303, 317, 319
home environments 198
home gateways 282, 285
home healthcare 282, 283, 284, 285, 286, 287, 289, 292
home healthcare data 285
home healthcare measurement devices 285
home healthcare services 26, 283
home monitoring 198, 208, 209, 217
home patient monitoring 156
home remote care 322
hospital information systems 284
hospital legacy systems 198
hospital patient monitoring 156
human-computer interfaces 98
human-computer interfaces (HCI) 229, 249
human machine interface technology 198

I
IEEE European Conference on Smart Sensing and Context (EuroSSC) 304
IEEE International Conference on Pervasive Computing and Communications (PerCom) 303
IEEE Transactions on Information Technology in Biomedicine (TITB) 303
IFESS Conference 303
IHE HIS 133, 149, 151
IMSS General Hospital 230
INET International 114, 115, 117, 118, 119, 120, 125, 126, 127
information access engines 30
infotainment management with speech interaction via remote microphones and telephone interfaces (INSPIRE 2004) project 28
infrareds 28
infrared sensors, active 28
infrared sensors, passive 27
insider attacks 159, 168
in situ evaluations 239, 242, 244, 245, 247
Instrumental Activities of Daily Living (IADL) scale 299, 300
intelligent devices 79
intelligent environments 302
Intelligent Hospital application 134, 150
intelligent systems 99
intelligent television 31
intelligent textiles 303, 304, 308, 316
intelligent units 299, 302
International Classification of Functioning, Disability and Health (ICF) 299, 318, 320
interoperability 255
interpretation layer 252
intruder node attacks 159
intruder nodes 159
ISO/IEEE 11073 standards 282, 283, 284, 289, 291, 292, 293, 294
Italian elderly population 26
Italian healthcare system 322, 326, 327, 328, 329, 332, 333
Italy 25, 26, 33, 34, 322, 326, 327, 328, 329, 332, 333

J
JAAS (Java authentication and authorization service) 140, 149
jamming attacks 159, 161
Japan 295, 296
JCreate 254

K
Kansas State University 158
knowledge management (KM) 1, 2, 6, 7, 18
knowledge management tools 1

L
Lifeshirt 199, 200, 201
LifeShirt 199, 226
lifestyle management 116
link-layer security mechanisms 161
local area networks (LAN) 98, 99
localization 78, 83
local networks 26
location systems 99, 101
location tracking 79
long-term care (LTC) 40, 55, 63, 64, 75

M
machine learning algorithms 251, 252, 264, 271, 272, 276, 277
magnetic switches 27, 28
MAGS (Michigan Autonomous Guidance System) 29, 30
Index

mandatory access control (MAC) 185, 186
mass casualty response systems 100
Med-e-Tel Conference 303, 318, 320
Medicaid 40, 42, 45, 46, 48, 50, 51, 52, 55, 74, 76, 77
medical model 2, 3
medical sensor networks 157, 160, 170, 171
medical services 39, 40
Medicare 40, 42, 44, 45, 46, 48, 50, 51, 52, 54, 74, 296
Medicare patients 40
medication dispensers 30
medication dispensing systems 25, 27, 30
mediniQVT 256, 279
Med-O-Wheel Smart system 30
Medtronic 27
Medtronic Care Link Network 27
Memojog project 29, 30, 37
memo-recorders 29
mental efficiency 298
message authentication codes (MAC) 161, 162, 165, 166, 167
metabolic syndrome 283
meta object facility (MOF) 255, 280
metropolitan area network (MAN) 98, 99
m-health applications 283
MOBI-DEV HIS 133, 150
mobile activity monitor 100
mobile devices 173
mobile health devices 198
mobile-health (m-health) 283
mobile health systems 198, 200, 222
mobile phones 123, 124
model-driven architecture (MDA) 255, 280
model-driven development (MDD) 255, 260
model-driven engineering (MDE) 255, 279
monitoring systems, commercial 100
moral support 31
mortality rates 2
Moteiv platform 254
Motionlogger device 311, 312, 313
Mount Sinai Medical Center Personal Health Card 176
muscle activity recorder and transceiver (MART) 314
MyProxy software 141, 146, 150

N
National Nursing Home Survey (NNHS) 40, 45, 46, 72
nationwide health information network (NHIN) project 175
near field imaging (NFI) 78, 79, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94
Nemo portable system 28
nesC language 254, 255, 273, 274
the 34
.NET Micro Edition 254
network protocol 7, 14, 23
network technologies 98
network topology 1, 7, 11, 12, 13, 14, 15, 18, 24
network topology, mesh 7, 12, 13, 14, 21, 22
network topology, star 7, 11, 12, 13, 14
Nintendo DS 298
Nintendo Wii 298
nursing facilities (NF) 40, 65
nursing home abuse 45
nursing homes 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 74, 75, 76, 97, 102, 296, 299
nursing home services, basic 40

O
OASIS (Organization for the Advancement of Structured Information Standards) 141, 142, 146, 150
OASIS standards 142
Office of the National Coordinator for Health IT (ONC) 175
OGSA-DAI 134, 138, 140, 141, 143, 145, 147, 150, 151, 152
ON/OFF switches 9
open source software (OSS) 141
Optical Fibre Sensors Embedded into technical Textile for Healthcare monitoring (OF-
SETH) 307, 308, 316
optical/ultrasonic systems  28
outsider attacks  158, 159, 167
oxygen saturation (SpO2)  98, 100, 101, 102, 103, 104, 105, 106, 107, 112

P
passive eavesdropping attacks  159
patient care systems  284
patient consent  173, 174, 180, 181, 184, 185, 186
patient monitoring  229, 246
pattern recognition  252, 254, 256, 262, 263, 265
people  119, 121
people tracking  78, 79, 80
permission propagation requirement  137
personal alarm systems  26
Personal Area Networks (PAN)  98, 99
personal digital assistants (PDA)  29, 131, 132, 137, 138, 139, 145, 146, 153, 158, 167, 229, 230, 232, 237, 238, 244
personal emergency calls  79
personal health systems  155
personal information security  131
personal medication systems  30
personal services  39, 40, 42, 44, 56, 60, 62, 66, 72
personal telehealth systems  284
pervasive computing  99, 100, 112, 113, 130, 131, 132, 133, 134, 137, 139, 148, 151, 251, 253, 263, 276
pervasive healthcare applications  251, 252, 253, 256, 257, 261, 262, 263, 265, 274, 276, 277
pervasive healthcare delivery  197, 198
pervasive healthcare systems  100, 198, 207
pervasive healthcare technology  198
pervasive health systems  156, 297, 299, 308
pervasive monitoring  97, 98, 99, 100, 102, 110
pervasive systems  98, 100
pervasive technology solutions  114, 115, 125, 126
pervasive tracking  78, 79, 80, 81, 82, 83, 86, 88, 90, 92, 94, 95, 96
Pflegeversicherung  296
pHealthNet virtual community  239, 240, 241, 242, 243
physical activity monitoring  198
physical efficiency  298
physical infrastructures  229, 241, 242, 246, 249
physiological data  158, 167
picture archiving and communication systems (PACS)  323, 325
pill organizers  30
pill organizers, electronic  30
platform  121
platform independent models (PIM)  255, 260, 261, 265, 267, 268, 269, 270, 271, 272, 273, 274, 275
platform specific models (PSM)  255, 260, 261, 265, 267, 268, 269, 270, 273, 276
POISE system  81
population lifespan  2
Portugal  33
positioning technologies  98
power line carrier (PLC) technology  28
preprocessing layer  252
presence detection  79
pressure mats  27
PREVENIMSS program  239, 249
private insurance  40
private nursing agencies  44
private payment  40
process  121
processing power  97
protection  121
public key cryptography (PKC)  164
Public Key Infrastructure (PKI) security credentials  141
Q
QoS requirements  160, 202, 206, 207, 209, 211, 212
quality of care  322, 326, 330
quality of life  283, 284
Index

quality of service (QoS) 160, 202, 212
Queens Health Network 176
query manager 179
query-view-transformation (QVT) 256, 280

R
radio frequency (RF) transmission 28
real choice systems change grants 44
received signal strength indicator (RSSI) 9
regional health information organizations (RHIO) 175
registered nurses (RN) 40, 64, 71
reminder systems 25, 27, 29
remote health monitoring 252
remote monitoring 323
remote sites (RS) 203, 204
replay attacks 159
resident assignment 43
residential aged care 1, 2, 3, 4, 6, 14, 15, 17, 24
residential care 40
resident oriented care 43, 73
resource management 99
respect 43, 48, 70
respect, lack of 48
return link (RL) 202
reusable transformation components 256
RFID tags 9, 31, 229
RFID tags, passive 9
role-based access control (RBAC) 131, 137, 140, 141, 142, 150, 185, 186, 189, 190

S
safety monitoring systems 27
safety systems 25, 27
sampling 199, 209, 217
satellite interactive terminals (SIT) 202
Scalable Medical Alert and Response Technology (SMART) project 97, 101, 102, 103, 104, 105, 106, 107, 108, 110, 111, 112
Scandinavia 34
second demographic transition 296
secure portable token (SPT) 174, 177, 178, 179, 180, 181, 182, 183, 184, 190, 191
secure socket layer (SSL) 287
Security Assertion Markup Language (SAML) 141
selective reporting attacks 159
sensor design 1, 9
sensor design considerations 9
sensor devices 2
sensor miniaturization 97
sensor network system 7, 299
sensor node messages 159
sensor nodes, wireless 7
sensors, acceleration 312, 313
sensors, ambient environmental 7, 9, 13, 18
sensors, ambient light 8
sensors ambient temperature 8
sensors, body 79
sensors, body area network (BAN) 7, 8
sensors, body temperature 8
sensors, body-worn 156
sensors, ECG sensing 8, 100
sensors, electrostatic 81
sensors, infrared 27, 28
sensors, location 8, 18
sensors, location and usage 7
sensors, mobile location 9
sensors, near-field floor 80
sensors, passive infrared (PIR) 8, 16
sensors, physiologic 99, 103
sensors, physiological 98, 100, 102
sensors, pressure 27
sensors, sound 27, 28
sensors, triaxial-accelerometry 8
sensors, usage 9
sensors, wearable 199, 200, 211, 223
sensors, wireless body 197, 198
Sentilla platform 254, 280
short-range wireless communications 79
situation-aware systems 252, 276
situation inference layer 252, 277
smart cards 172, 174, 176, 177, 178, 180, 192
smart environments 251
smart homes 25, 26, 27, 32, 33, 34, 35, 36, 37
smart home systems 25, 26
smart home systems, first generation 26
smart home systems, second generation 26, 27
smart home systems, third generation 26, 27
smart house projects 284
Smart Shirts 26, 36, 303
Smart Table system 31
smart tiles 27
SNAP architecture 157, 158, 161
social healthcare model 3
social isolation 26, 31, 36
social services 39, 40, 41, 44, 47, 48, 50, 54, 65, 67
Spain 33
SPIN 255
storage manager 179
straying detection 79
structure query language (SQL) 179
Sweden 34
symmetric encryption/decryption algorithms 160
system development lifecycle (SDLC) 117, 119, 121

T

task execution requirement 137
task oriented care 43
Technical University of Munich 295, 306, 316
technologies, assistive 3, 26, 34, 38
technologies, pervasive 100
technologies, wireless 197, 201, 221, 222
technology adoption 3
telecardiology 323
teledermatology 323, 324
telehealth 2, 24, 323, 330

telemedicine 197, 201, 202, 206, 209, 222, 224, 226, 282, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335
teleopthalmology 323
telepathology 323
teleurgery 323
temporary medical data 176
theatrical representations 230
TinyOS system 158, 161, 162, 163, 166, 170, 254, 259, 263, 265, 268, 271, 272, 273, 276, 279, 304, 305, 314
TinySec security mechanism 161, 162, 163, 164, 165, 169
transducers 10, 18, 284
transformation languages 255
transformation languages, declarative 255, 256, 269
transformation languages, hybrid 255, 256, 269, 280
transformation languages, imperative 255, 256, 269
transport layer security (TLS) 176, 181, 193
triage tags 100, 101, 111
triage tags, intelligent 100
triboelectric effect 81
triple graph grammars 255, 279
trust 174, 184
TrustCare (trustworthy pervasive healthcare services) project 133, 134

U

Ubihealth systems 228, 229, 230, 233, 234, 242, 243, 245, 246, 247, 249
ubiquitous computing 97, 110, 131
ubiquitous computing (ubicomp) 228, 229, 235, 244, 245, 247, 248, 249, 302, 313, 318, 320
ubiquitous monitoring 98, 115, 117
ubiquitous networks 5, 24
UK (United Kingdom) 33, 34, 175, 176
UMTS, 3G 198, 200, 222
United Nation Population Division (UNDP) 25
United States 39, 40, 42, 60, 72, 74, 76
United States, nursing homes in 39, 40, 42
universal mobile telecommunications systems (UMTS) 198, 200, 205, 211, 213, 216, 222, 224
University of Pittsburgh Medical Center 176
usage control model (UCON) 185
USA (United States of America) 3, 40, 175, 176, 322, 323, 326, 330, 331, 332, 333, 335
user-centered context-awareness (UCCA) approaches 135
user interface, adaptive 29
user interfaces 79, 81
user permissions 130, 131, 138, 139, 145
U.S. national healthcare system 326

V
VDI/VDE/IT AAL Deutschland Conference 303
vegetative limitations 299, 300
virtual community 27, 239
virtual machines 254
vital information 198
Vivometrics 199
voice-activated communication devices 229

W
walking-wounded 100
Wearable Technologies Conference 304
Web server 139
Welch Allyn Micropaq Monitor 100, 112
wellness monitoring 1, 2, 3, 4, 5, 7, 14, 15, 17, 18, 24
wellness monitoring systems, ubiquitous 1
WIISARD (wireless Internet information system for medical response in disasters) 100, 101, 102
WiMAX 98, 99, 111
wireless access 79
wireless body area network (WBAN) 158, 161, 165
wireless communication 97, 111
wireless communication protocols 1, 2, 11
wireless communications 98
wireless healthcare program 121
wireless local area network (WLAN) (IEEE 802.11 b/g) 4, 7, 11, 12, 13, 14, 16, 198, 211, 212, 213, 287
wireless networks 7, 229
wireless sensor, architecture of 9
wireless sensor networks 155, 156, 157, 158, 161, 164, 169, 170, 171
wireless sensor networks (WSN) 1, 2, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 21, 22, 23, 24, 157, 158, 169, 170, 254, 273, 274
Wizard of Oz paradigm 229, 244
WSN design 1, 13

X
X-10 PLC technology 28
XACML (extensible access control markup language) 141, 142, 145, 146, 147, 150

Z
ZigBee (IEEE 802.15.4) 4, 7, 9, 11, 12, 13, 16, 22, 98, 101, 108, 112, 113, 158, 165, 214, 215, 226, 255